BB&E
CONSULTING ENGINEERS & PROFESSIONALS

September 11, 2019

Mr. Mark Doolan
Project Coordinator
United States Environmental Protection Agency – Region VII (AWMD/WRAP)
11201 Renner Boulevard
Lenexa, KS 66219

Subject: Collis, Inc. (EPA ID No. IAD047303771)
Clinton, Iowa
Final 2019 First-Half Semi-Annual LTM Summary Report

Dear Mr. Doolan,

On behalf of Collis, Inc., BB&E, Inc. is pleased to submit a hardcopy of the *Final 2019 First-Half Semi-Annual Long-Term Monitoring Summary Report*.

If you have any questions concerning this document, or any other issues regarding this project, please call me at (248) 489-9636, Extension 317.

Sincerely,

Cindy Lang
Project Manager

Cc: Brian Calhoun, SSW Holding Company, Inc.

RCRA 09/16/2019

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SEP 16 2019

Collis, Inc. – Semi-Annual Long Term Monitoring (LTM)

2019 First-Half Semi-Annual LTM Summary Report- FINAL

Report Date: September 11, 2019

D. Mark Doolan
U.S. Environmental Protection Agency
Air and Waste Management Division, WRAP Branch
11201 Renner Blvd.
Lenexa, KS 66219
913-551-7169

Site Name: Collis, Inc.
Clinton, Iowa
Corrective Measures Implementation - Long Term Monitoring
U.S. EPA ID #IAD047303771

Prepared by: Cindy Lang, BB&E, Inc.

BB&E, Inc. (BB&E) is pleased to provide this 2019 First-Half Semi-Annual Long-Term Monitoring (LTM) Summary Report. This report documents the first semi-annual LTM sampling event of 2019 conducted April 8, 2019 through April 9, 2019 at the Collis Facility (Site) located at 2005 South 19th Street in Clinton, Clinton County, Iowa (**Figure 1** and **Figure 2**). The Site includes an industrial manufacturing plant and covers an area of approximately 12.5 acres. A detailed summary of the operational history of the site, environmental setting (e.g., land use, topography, site geology and hydrogeology), historic environmental investigations completed, and the sources and extents of known contamination can be found in the USEPA approved *Final Corrective Measures Study Report* (CMS), dated April 24, 2018 (BB&E, 2018).

The CMS includes recommendations for soil land use controls (LUCs)/institutional controls (ICs). Because contamination remains in groundwater on-site and off-site at concentrations exceeding United States Environmental Protection Agency Maximum Contaminant Level (U.S. EPA MCL) criteria, resource-use restrictions via on-site and off-site Environmental Restrictive Covenants (ERC's) was developed. The ERCs restrict impacted properties from residential use and prohibit groundwater access and consumption. As noted in the *Revised Final Corrective Measures Implementation – Long Term Monitoring Work Plan* (CMI-LTM WP; BB&E, 2019a), which was

submitted to, and approved by the U.S. EPA, the CMS included recommendations for LTM of groundwater, in addition to the ERC's, including semi-annual groundwater monitoring for five years. Following the five years of semi-annual LTM, an evaluation will be conducted to determine the effectiveness of the monitored natural attenuation (MNA) groundwater remedy. Additionally, due to residual contamination in subsurface soils (2-10 feet below ground surface [bgs]) above U.S. EPA screening levels, a Media Management Plan (MMP) was developed to protect construction workers from exposure to subsurface contamination (BB&E, 2017). The MMP includes inspection and maintenance requirements for the gravel lot located north and northeast of the main facility building; specifically, the gravel lot will be maintained as an effective barrier to protect against direct contact with impacted subsurface soils as a result of erosion and normal use of the gravel surface cover. The gravel lot is to be inspected semi-annually to determine if it is functioning as intended and if maintenance is required. The MMP was submitted to, and approved by the US EPA, and included inspection and maintenance requirements for the gravel lot located north and northeast of the main facility building.

On February 25-27, 2019, thirty-one monitoring wells and piezometers were abandoned at and in the vicinity of the Collis facility. The monitoring wells and piezometers that were abandoned were no longer utilized, and, as agreed upon during the October 24, 2018 meeting at Region 7 between the USEPA and Collis, were to be properly abandoned to minimize long-term environmental liabilities. Abandonment activities are documented in the *Final Summary Report for 2019 Monitoring Well Abandonment Activities* (BB&E, 2019b).

Following the February 2019 monitoring well abandonment activities, the CMI-LTM WP was revised, and approved by the USEPA on 8 May 2019, to the Revised Final CMI-LTM WP in order to reflect the changes in monitoring wells present at and in the vicinity of the Collis site.

This report has been prepared in accordance with the Revised Final CMI-LTM WP (BB&E, 2019a) and the *Quality Assurance Project Plan* (QAPP; BB&E, 2014).

The objectives for field activities completed during execution of the 2019 first-half semi-annual LTM event consisted of the following:

- Groundwater elevations were taken from relevant monitoring wells and piezometers, as defined in the Revised Final CMI-LTM WP, in order to develop potentiometric surface maps to continue to monitor and evaluate the extent of the groundwater interface with Manufacturer's Ditch and groundwater flow direction.
- Groundwater samples were collected for analysis to monitor concentrations of contaminants of concern over time.
- Groundwater monitoring was conducted to observe natural attenuation parameters and concentrations of chlorinated volatile organic compounds (CVOCs). MNA parameters included methane/ethane/ethene, iron, manganese, chloride, sulfate, nitrate and nitrite; these MNA parameters were selected in order to demonstrate the status of the MNA remedy at the Site.
- A gravel lot inspection was conducted in accordance with the 2017 MMP (BB&E, 2017) to identify areas where the gravel was worn down, erosion was occurring (e.g., deep potholes), animals were burrowing, and/or ponding was occurring, and determine if any maintenance of the lot was required.

2019 FIRST-HALF SEMI-ANNUAL LTM MONITORING SUMMARY

This 2019 first-half semi-annual LTM summary report contains a summary of groundwater analytical results (**Table 1**), a summary of groundwater elevation results (**Table 2**), groundwater field parameter readings (**Table 3**), Vapor Intrusion Screening Level (VISL) comparisons (**Table 4**), MNA results (**Table 5**), detections summary figures (**Figures 3**, **4**, **5**, and **6**), potentiometric surface maps (**Figures 7** and **8**), groundwater concentration trend graphs for key monitoring wells (**Graphs 1**, **2**, and **3**), laboratory analytical data (**Attachment A**), field notes/forms (**Attachment B**), the gravel lot inspection (**Attachment C**), and the Annual Certification for Compliance with LUCs/ICs for 2018 (**Attachment D**).

The 2019 first-half semi-annual LTM activities are summarized below:

- Groundwater samples were collected from specific site monitoring wells, as described in the Revised Final CMI-LTM WP. Groundwater analytical results are summarized in **Table 1**, and sample locations are shown on **Figure 2**.

- Groundwater samples from the first saturated unit (a shallow unconfined aquifer) were collected from MW-38, MW-39, MW-50S, PZ-47 and PZ-48 and analyzed for volatile organic compounds (VOCs; U.S. EPA Method 8260).
- Groundwater samples from the second saturated unit (upper unconsolidated sediments and weathered bedrock) were collected from MW-34, MW-45, MW-47S, MW-50, and MW-56 and analyzed for VOCs (U.S. EPA Method 8260). Additionally, MW-34 was sampled and analyzed for MNA parameters (chloride, nitrate/nitrite, sulfate/sulfide, dissolved iron, dissolved manganese, methane, ethane, and ethene). Monitoring wells MW-34 and MW-45 were also sampled and analyzed for 1,4-dioxane (U.S. EPA Method 8260SIM).
- Groundwater samples from the third saturated unit (lower unconsolidated sediments and upper bedrock) were collected from MW-42 and MW-53 and analyzed for VOCs (U.S. EPA Method 8260), 1,4-dioxane (U.S. EPA Method 8260SIM), and MNA parameters (chloride, nitrate/nitrite, sulfate/sulfide, dissolved iron, dissolved manganese, methane, ethane, and ethene).
- A groundwater sample from the fourth saturated unit (bedrock) was collected from MW-43 and analyzed for VOCs (U.S. EPA Method 8260).

- Groundwater field parameters, including oxidation-reduction potential (ORP), dissolved oxygen (DO), specific conductivity, turbidity, and pH, were collected from monitoring wells during purging, and prior to sample collection, at approximately 5-minute intervals. Groundwater field parameters were collected to determine when stabilization had been achieved and a groundwater sample could be collected. A groundwater sample was collected when field parameters had stabilized for three successive readings or when 45 minutes of purging had been completed. Prior to sample collection, a final reading of the field parameters was recorded. The following stabilization criteria were used:
  - ± 0.1 Standard Unit (S.U.) for pH
  - ±3 percent (%) for specific conductance (millisiemens/centimeter [mS/cm])
  - ±10 millivolts (mV) for ORP
  - ±0.3 milligrams per liter (mg/L) for DO
  - ±0.5 Degrees Celsius (°C)
  - ±10% for turbidity values or less than (<) 50 Nephelometric Turbidity Units (NTUs)

Groundwater field parameters were used to enhance the dataset for evaluating the effectiveness of the MNA groundwater remedy in accordance with the *Natural Attenuation of Chlorinated Solvents in Groundwater: Principles and Practices* (Interstate Technology and Regulatory Council, 1999) guidance document.

- In accordance with the Revised Final CMI-LTM WP all purge water generated was disposed of directly at the waste water treatment plant inside the Collis Facility. All sampling gloves and other personal protective equipment was double-bagged and placed in an on-site municipal waste container for disposal.

DEVIATIONS FROM THE REVISED FINAL CMI-LTM WP

There were no deviations from the Revised Final CMI-LTM WP experienced during this 2019 first-half semi-annual LTM event.

GROUNDWATER ELEVATION SUMMARY

Monitoring wells/piezometers that are screened in four different saturated units, as described in the Revised Final CMI-LTM WP, were gauged during the 2019 first-half semi-annual LTM event. Potentiometric surface maps for the first and second saturated units are included in this report as **Figures 7** and **8**. Potentiometric surface maps were not prepared for the third or fourth saturated units as only two and one data points, respectively, are available for these saturated units. A summary of groundwater elevation and flow information is summarized below:

- Historically, groundwater in the first saturated unit, a shallow unconfined aquifer, flows northwest to north-northwest. Groundwater in the first saturated unit appears to vent to Manufacturer's Ditch. As shown on **Figure 7**, the groundwater flow direction in the first saturated unit, was consistent with historic observations.
- Historically, groundwater in the second saturated unit, the upper unconsolidated sediments and weathered bedrock, flows northwest. As shown on **Figure 8**, the groundwater flow direction in the second saturated unit was consistent with historic observations.
- Historically, based on previous potentiometric surface maps, groundwater in the third saturated unit, the lower unconsolidated sediments and weathered bedrock, flows northwest.

- Upon removal of expansion plugs, various monitoring wells were noted to have water slowly flowing to the top and/or over the top of casing indicating artesian conditions consistent with historic observations. Wells exhibiting artesian conditions during the 2019 first-half semi-annual LTM event are identified on **Table 2**.

A summary of groundwater elevations is included as **Table 2** and field notes and forms are provided for reference in **Attachment B**.

GROUNDWATER ANALYTICAL RESULTS

As specified in the Revised Final CMI-LTM WP, groundwater analytical results were compared to U.S. EPA MCLs or the most recent Regional Screening Level (RSLs), if no MCL exists, for the purposes of evaluating the effectiveness of the MNA groundwater remedy. In addition to the MCL or RSL comparison, per the Revised Final CMI-LTM WP, shallow groundwater analytical results for VOCs were also compared to target groundwater concentrations for VISLs. VOC results from the first and second saturated units have been compared to VISL target groundwater concentrations for commercial exposure, calculated using the U.S. EPA VISL Calculator last updated May 2018 (U.S. EPA, 2018). A summary of groundwater analytical results is provided in **Table 1**. Groundwater analytical results compared to VISL target groundwater concentrations for the first and second saturated units are shown on **Table 4**.

All samples were analyzed by ALS Laboratory Group located in Holland, Michigan (a National Environmental Laboratory Accreditation Program [NELAP] approved lab). A complete set of laboratory results is provided in **Attachment A**. Field notes and sample log forms are provided for reference in **Attachment B**.

Laboratory analytical results are summarized below.

VOCs

First Saturated Unit: Monitoring wells MW-38, MW-39, MW-50S, PZ-47, and PZ-48 were sampled and analyzed for VOCs. VOCs detected above screening criteria included cis-1,2-Dichloroethene (DCE) and vinyl chloride (VC).

Cis-1,2-DCE was detected above the MCL in MW-38 and MW-39. VC was detected above the MCL and VISL target groundwater concentration in MW-38, MW-39, and MW-50S.

Additional detections of VOCs in the first saturated unit include low level detections of acetone (MW-38, MW-39, PZ-47, and PZ-48), tert-butyl alcohol (MW-38, PZ-47, and PZ-48), chloromethane (PZ-47 and PZ-48), and 2-methylnaphthalene (PZ-48); all detections are below applicable USEPA MCLs or USEPA Tapwater RSLs. These VOCs have not historically been present at the site, and due to their low concentrations in numerous wells, are not anticipated to be indicative of site conditions. These detections are most likely due to cross-contamination, laboratory contamination or other interference. For those reasons, they are not included on the results tables or figures, but are indicated in the laboratory analytical reports in **Attachment 1**.

Analytical results for the first saturated unit are included on **Table 1, Table 4,** and **Figure 3**.

Second Saturated Unit: Monitoring wells MW-34, MW-45, MW-47S, MW-50, and MW-56 were sampled and analyzed for VOCs. VOCs detected above screening criteria included cis-1,2-DCE, TCE, and VC.

Cis-1,2-DCE was detected above the MCL in MW-45. VC was detected above both the MCL and VISL target groundwater concentration in MW-45 and MW-50. TCE was detected above both the MCL and VISL target groundwater concentration in MW-34, and above just the VISL target groundwater concentration in MW-45.

Additional detections of VOCs in the second saturated unit include low level detections of acetone (MW-34, MW-45, MW-47S, MW-50 and MW-56), tert-butyl alcohol (MW-45, MW-47S, and MW-50), and 2-methylnaphthalene (MW-47S and MW-56); all detections are below applicable USEPA MCLs or USEPA Tapwater RSLs. These VOCs have not historically been present at the site, and due to their low concentrations in numerous wells, are not anticipated to be indicative of site conditions. These detections are most likely due to cross-contamination, laboratory contamination or other interference. For those reasons, they are not included on the results tables or figures, but are indicated in the laboratory analytical reports included in **Attachment 1**.

Analytical results for the second saturated unit are included on **Table 1, Table 4,** and **Figure 4**. A groundwater concentration trend graph for MW-34 is included on **Graph 1**.

Third Saturated Unit: Monitoring wells MW-42 and MW-53 were sampled and analyzed for VOCs. VOCs detected above screening criteria included cis-1,2-DCE, TCE, and VC. All three

parameters were detected above the MCL in MW-42. No parameters exceeded screening criteria in MW-53.

Additional detections of VOCs in the third saturated unit include low level detections of acetone (MW-42 and MW-53), tert-butyl alcohol (MW-53), and 1,1,2-trichloroethane (MW-42); all detections are below applicable USEPA MCLs or USEPA Tapwater RSLs. These VOCs have not historically been present at the site, and due to their low concentrations in numerous wells, are not anticipated to be indicative of site conditions. These detections are most likely due to cross-contamination, laboratory contamination or other interference. For those reasons, they are not included on the results tables or figures, but are indicated in the laboratory analytical reports included in **Attachment 1**.

Per the Revised Final CMI-LTM WP, results from the third saturated unit were not compared to VISL target groundwater concentrations. Analytical results for the third saturated unit are included on **Table 1** and **Figure 5**. Groundwater concentration trend graphs for MW-42 and MW-53 are included on **Graph 2** and **Graph 3**, respectively.

Fourth Saturated Unit: Monitoring well MW-43 was sampled and analyzed for VOCs. There were no VOC detections exceeding the MCL.

Detections of VOCs in the fourth saturated unit include low level detections of acetone (MW-43); however, this detection is below applicable USEPA MCLs or USEPA Tapwater RSLs. Acetone has not historically been present at the site, and due to the low concentrations in numerous wells, is not anticipated to be indicative of site conditions. These detections are most likely due to cross-contamination, laboratory contamination or other interference. For those reasons, they are not included on the results tables or figures, but are indicated in the laboratory analytical reports included in **Attachment 1**.

Per the Revised Final CMI-LTM WP, results from the fourth saturated unit were not compared to VISL target groundwater concentrations. Analytical results for the fourth saturated unit are included on **Table 1** and **Figure 6**.

1,4-Dioxane

Select wells in the second and third saturated units were sampled for 1,4-dioxane. MW-34 and MW-45 (second saturated unit) and MW-42 and MW-53 (third saturated unit) were sampled for 1,4-dioxane; however, 1,4-dioxane was not detected in any of the groundwater samples during the 2019 first-half semi-annual LTM event. Analytical results are summarized in **Table 1**.

Vapor Intrusion

Groundwater samples collected from the first and second saturated unit were compared to VISL Target Groundwater Concentrations (**Table 4**). Sample results indicated that the first saturated unit had detections of VC that exceeded the VISL Target Groundwater Concentration and the second saturated unit had detections of TCE and VC that exceeded the VISL Target Groundwater Concentration; however, historic evaluation indicates that vapor intrusion is not a concern at the Site.

MONITORED NATURAL ATTENUATION (MNA) SUMMARY

MNA analyses was conducted during the 2019 first-half semi-annual LTM event in order to evaluate continued in-situ biodegradation via reductive dechlorination processes.

In accordance with the Revised Final CMI-LTM WP, MW-34, MW-42, and MW-53 were sampled for VOCs, MNA parameters (i.e., nitrate/nitrite, sulfate/sulfide, iron, manganese, methane, ethene, and ethane), and field parameters (dissolved oxygen [DO], oxidation reduction potential [ORP]), and pH). A detailed discussion of these parameters and relative favorability for in-situ biodegradation via reductive dechlorination is discussed below. A summary of environmental conditions supportive of reductive dechlorination for the three wells sampled during the 2019 first-half semi-annual LTM event has been included in **Table 5**.

Groundwater Field Parameters

DO is a measure of oxygen dissolved in a solution. Concentrations less than 0.5 mg/L are indicative of an environment potentially supportive of reductive dechlorination. All three wells (MW-34, MW-42, and MW-53) had concentrations exceeding 0.5 mg/L (1.59, 2.59, and 3.71 mg/L, respectively).

ORP is a measure of the electron activity and an indicator of the relative tendency of a solution to accept or transfer electrons. Favorable conditions for natural reductive dechlorination are less than

50 mV with less than -100 mV being optimal. MW-42 and MW-53 exhibited favorable conditions of -10.4 and -46.1 mV, respectively, while MW-34 was slightly out of favorable conditions with an ORP of 51.6 mV.

The optimal pH range for microbial activity is between 5 and 9. Biological activity is not likely to occur if the pH is below 5 or above 9. All three wells (MW-34, MW-42, and MW-53) exhibited favorable conditions with pH levels of 6.9, 7.03, and 7.06 units, respectively.

Sulfate Anions

Sulfate concentrations are monitored to evaluate the presence of alternate electron acceptors for microbial respiration. Sulfate was detected in all three wells including MW-34 (65,000 µg/L), MW-42 (110,000 µg/L), and MW-53 (35,000 µg/L) at concentrations higher than the optimal level (<20,000 micrograms per liter [µg/L]) for microbial activity. High sulfate levels may compete with the reductive dechlorination pathway.

Iron

Dissolved iron (i.e., ferrous iron) was detected in MW-42 (100 µg/L), MW-53 (180 µg/L), but concentrations did not indicate ideal conditions. Favorable concentrations of iron for in-situ reductive dechlorination are typically greater than (>) 1,000 µg/L.

Nitrate/Nitrite

Nitrogen, measured as nitrate and nitrite, was not detected in MW-42 or MW-53 and was detected in MW-34 at a concentration of 820 ug/L. Favorable conditions are generally less than 1,000 µg/L.

Degradation-Daughter Products

Cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE, and VC are degradation products of TCE. The presence of these degradation daughter products are positive indications that reductive dechlorination is occurring. VC is the intermediate degradation step prior to the generation of ethene, followed by ethane. All four daughter products (with the exception of 1,1-DCE in MW-34 and MW-53) were observed in all three wells (MW-34, MW-42, and MW-53).

As specified in the Revised Final CMI-LTM WP, groundwater concentration trend graphs were created for key monitoring wells (MW-34, MW-42, and MW-53) in order to evaluate the historical

concentration trends of TCE and the degradation-daughter products over time. These concentration trend graphs are included as **Graph 1**, **Graph 2**, and **Graph 3**.

Dissolved Gases

The presence of the degradation products ethene and ethane tend to indicate that the complete destruction of TCE via the reductive pathway is occurring. Ethene and ethane were not detected in any of the wells (MW-34, MW-42, and MW-53). Elevated methane levels (>500 µg/L) are generally indicative of strong reducing conditions supportive of reductive dechlorination. Methane was detected in all three monitoring wells (MW-34, MW-42, and MW-53); however, concentrations were not suggestive of strong reducing conditions (>500 µg/L).

2019 FIRST-HALF SEMI-ANNUAL LTM EVENT CONCLUSIONS

VOCs

Based on the groundwater monitoring results from the 2019 first-half semi-annual LTM event, VOCs continue to exceed MCLs in certain wells as shown on **Table 1**. Specifically, cis-1,2-DCE, TCE, and VC continue to be detected in groundwater above MCLs at the Site. **Figures 3**, **4**, **5**, and **6** show VOCs detected above MCLs for 2019.

In the first saturated unit, cis-1,2-DCE was detected above its MCL in two monitoring wells (MW-38 and MW-39) and VC was detected above its MCL in three monitoring wells (MW-38, MW-39, and MW-50S). In the second saturated unit, cis-1,2- DCE was detected above its MCLs in MW-45, TCE was detected above its MCL in MW-34, and VC was detected above its MCL in MW-50. In the third saturated unit, cis-1,2-DCE, TCE, and VC were detected above their respective MCLs in MW-42. In the fourth saturated unit, there were no VOC detections exceeding their respective MCLs. The constituent 1,4-dioxane was not detected in any of the samples.

The additional detections of VOCs at the site include low level detections of acetone, tert-butyl alcohol, chloromethane, 1,1,2-trichloroethane, and 2-methylnaphthalene; all detections are below applicable USEPA MCLs or USEPA Tapwater RSLs. These VOCs have not historically been present at the site, and due to their low, estimated, concentrations in multiple wells, are not anticipated to be indicative of site conditions. These detections are most likely due to cross-contamination, laboratory contamination or other interference. For those reasons, they are not

included on the results tables or figures, but are indicated in the laboratory analytical reports in **Attachment 1**. These will continue to be monitored during the next semi-annual LTM event.

Monitored Natural Attenuation

Analytical results and groundwater field parameters from the 2019 first-half semi-annual LTM event were indicative of reductive dechlorination of TCE as evidenced by detections of TCE daughter products including trans-1,2-DCE, cis-1,2-DCE, 1,1-DCE, VC, ethene, ethane, and methane. Measured field parameters (ORP, pH, and DO) were also indicative of reducing conditions conducive to dechlorination.

GRAVEL LOT INSPECTION

As required by the MMP, the gravel lot was thoroughly graded in October 2017 and, at the request of EPA, a survey of the gravel lot was conducted on May 15, 2018 in order to establish a benchmark condition for which semi-annual inspections will be compared to. A figure showing the gravel lot area to be inspected is included in **Attachment C**.

In accordance with the MMP (BB&E, 2017), the 2019 first half semi-annual gravel lot inspection was conducted on April 8, 2019 to evaluate if it is functioning as intended (i.e., to protect against direct contact with impacted subsurface soils) and determine if any maintenance of the lot was required. The gravel lot was inspected for areas where the gravel had been worn down, and evidence of erosion, burrowing animals, poor drainage or ponding, and any deep potholes (areas with no gravel cover). There were no necessary repairs or areas where replacement of the gravel was necessary during the April 2019 inspection. In accordance with the MMP (BB&E, 2017), if repairs or replacement of the gravel cover are determined to be necessary during any future semi-annual inspections, repairs will be completed within 60 calendar days to continue to protect against exposure to underlying contaminants in the subsurface soils.

The inspection form and photographs taken during the inspection to document the overall condition of the gravel cover throughout the lot are included in **Attachment C**.

FINANCIAL ASSURANCE MECHANISM (FAM)

Based on LTM sampling results to date, site conditions remain unchanged, which does not warrant any updates to the FAM; therefore, the FAM remains unchanged since its preparation in 2018. The

FAM will be re-evaluated for potential updates following the 2020 first semi-annual sampling event.

RECOMMENDATIONS

Groundwater monitoring and gravel cap inspections are recommended to be continued on a semi-annual basis in accordance with the Revised Final CMI-LTM WP for a period of five years. The semi-annual LTM sampling and analysis will be conducted in accordance with the U.S. EPA approved QAPP (BB&E, 2014). Gravel cap inspections will be conducted in accordance with the MMP (BB&E, 2017). As noted above, following the five years of semi-annual sampling, an evaluation will be conducted to determine the effectiveness of the MNA groundwater remedy. The evaluation results, with recommendations, will be submitted to U.S. EPA for review. The next semi-annual LTM event is currently scheduled for October 2019.

If you have any questions or comments regarding this report, please contact me at 248-489-9636 ext. 317 or clang@bbande.com.

Sincerely,

Cindy Lang
Project Manager
BB&E, Inc.

cc: Mr. Brian Calhoun – Collis/SSW
Mr. Charlie Denton – Barnes & Thornburg, LLP

Enclosures:

Figure 1 – Site Location Map
Figure 2 – Site Features Map
Figure 3 – Detections Summary First Saturated Unit April 2019
Figure 4 – Detections Summary Second Saturated Unit April 2019
Figure 5 – Detections Summary Third Saturated Unit April 2019
Figure 6 – Detections Summary Fourth Saturated Unit April 2019
Figure 7 – Potentiometric Surface Map First Saturated Unit April 2019
Figure 8 – Potentiometric Surface Map Second Saturated Unit April 2019

Table 1 – Groundwater Data Summary

Table 2 – Water Elevations Summary
Table 3 – Groundwater Field Parameter Readings
Table 4 – Vapor Intrusion Screening
Table 5 – LTM Groundwater MNA Results

Graph 1 – MW-34 Concentration Trends
Graph 2 – MW-42 Concentration Trends
Graph 3 – MW-53 Concentration Trends

Attachment A – Laboratory Analytical Data
Attachment B – Field Notes
Attachment C – Gravel Lot Inspection
Attachment D – Annual Certification for Compliance with LUCs/ICs for 2018

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Date/Time: 9/11/2019 8:34 AM
Author/Reviewer: KVB/CML/TEB

REFERENCES

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FIGURES

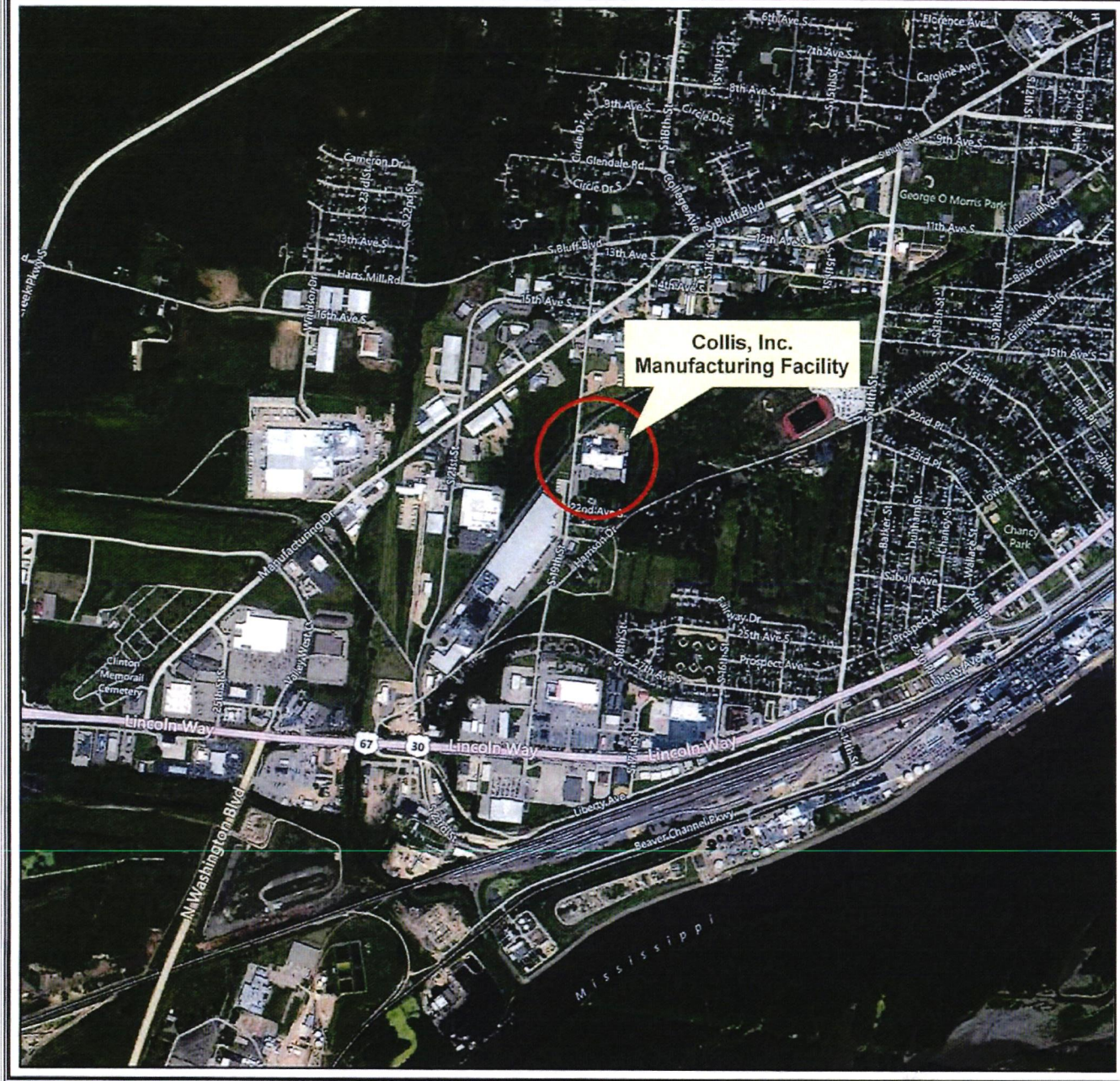


Figure 1

Site Location Map

Collis, Inc. Manufacturing Facility
Clinton, Iowa

NORTH

0 1,500 3,000
Feet

BB&E

JMP - 04/12/2012

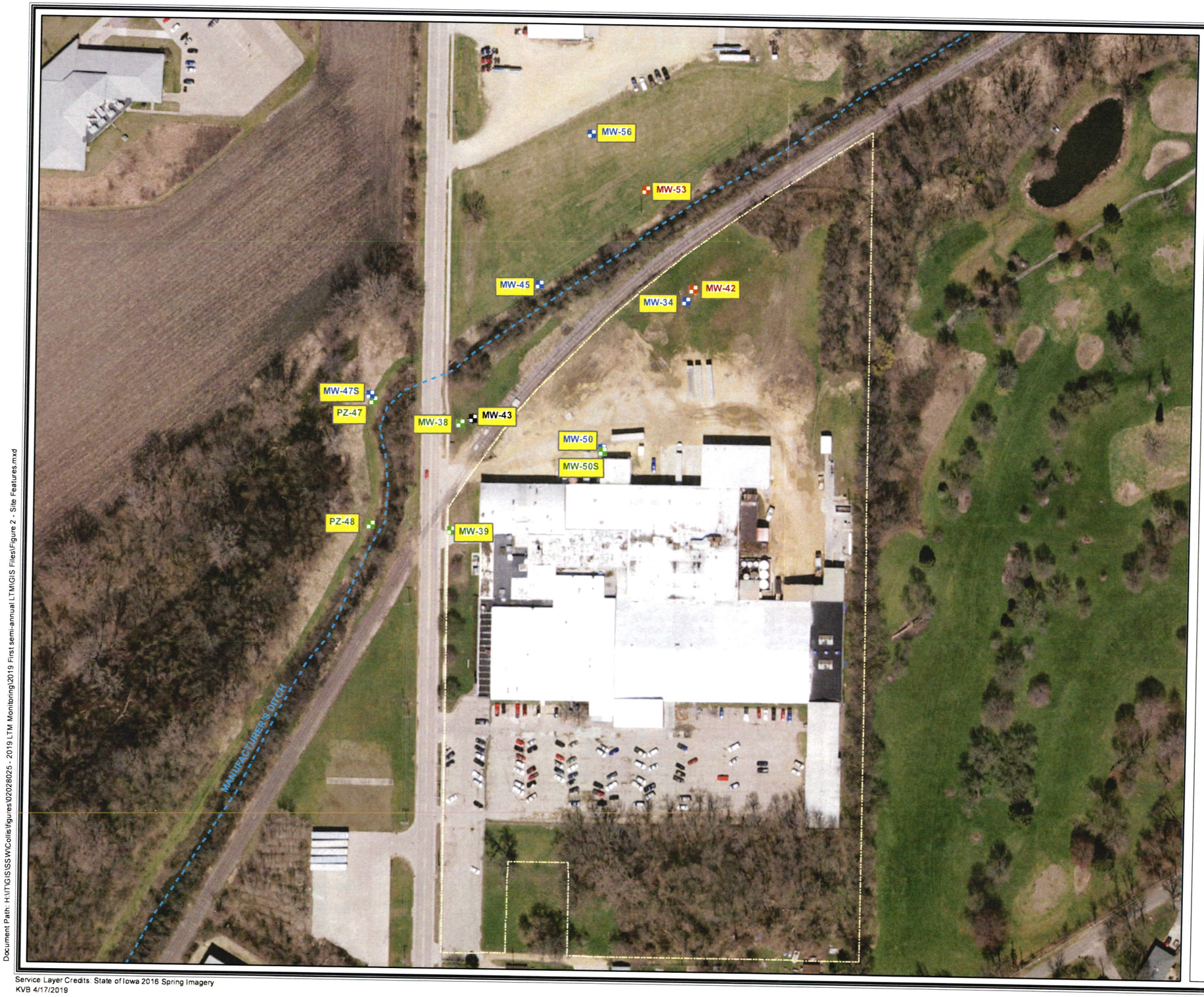


Figure 2

LTM Monitoring Well Locations

Collis, Inc. Manufacturing Facility Clinton, Iowa

Legend:

- Manufacturer's Ditch
- Property Boundary (Approximate)

Monitoring Wells

- First Saturated Unit
- Second Saturated Unit
- Third Saturated Unit
- Fourth Saturated Unit
- LTM Monitoring Well

Note:
LTM = long term monitoring

NORTH

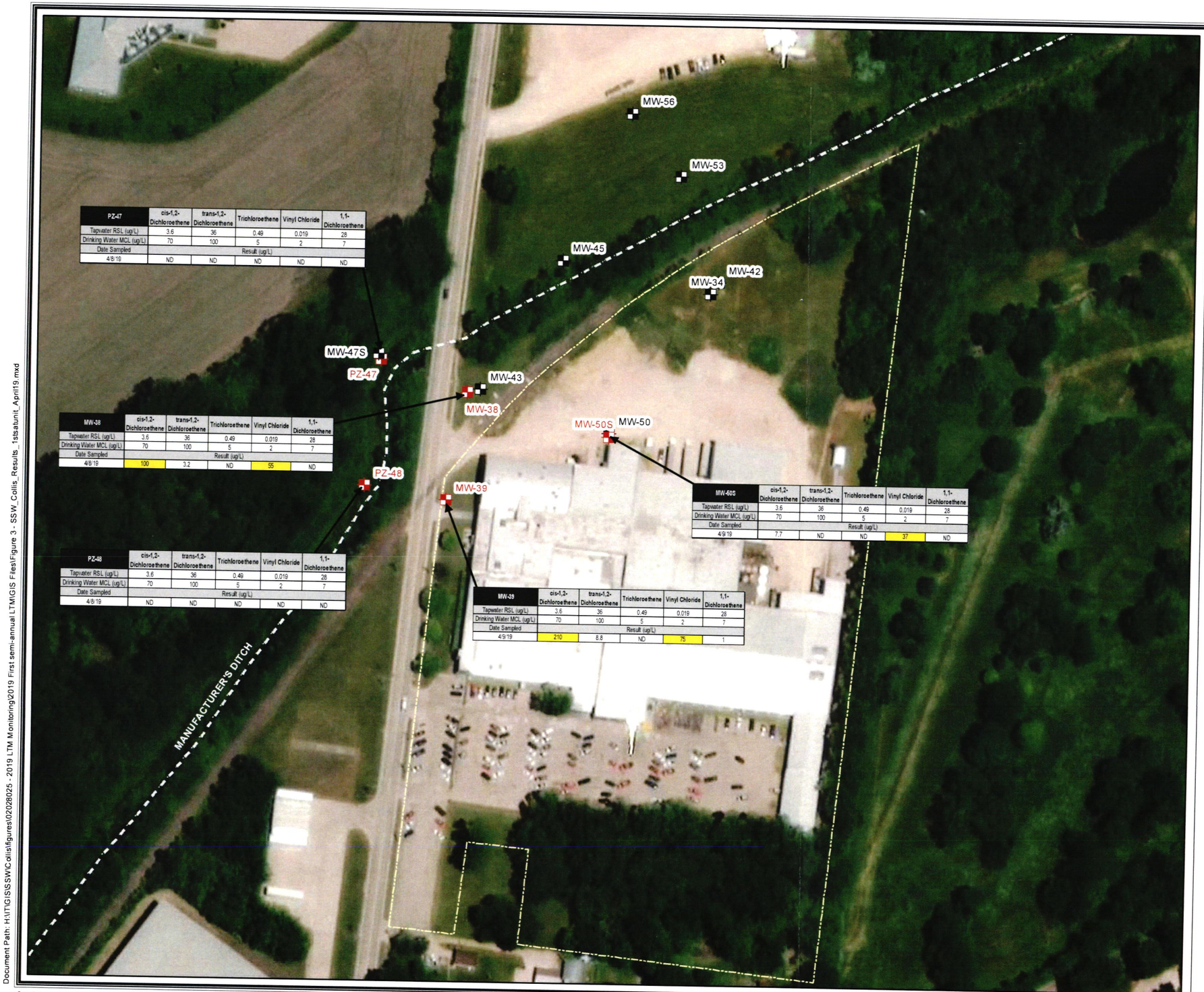
0 250 500

Feet

BB&E

Document Path: H:\IT\GIS\SS\WCollis\figures\02028025 - 2019 LTM Monitoring\2019 First semi-annual LTM\GIS Files\Figure 2 - Site Features.mxd

Service Layer Credits: State of Iowa 2016 Spring Imagery
KVB 4/17/2019



PZ-47	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/8/19	ND	ND	ND	ND	ND

MW-38	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/8/19	100	3.2	ND	55	ND

MW-50S	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/9/19	7.7	ND	ND	37	ND

PZ-48	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/8/19	ND	ND	ND	ND	ND

MW-39	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/9/19	210	8.8	ND	75	1

Figure 3

Detections Summary
First Saturated Unit
April 2019

Collis, Inc. Manufacturing Facility
Clinton, Iowa

Legend:

- Wells Sampled Unit 1
- Wells Not Sampled Unit 1
- Manufacturer's Ditch
- Property Boundary (Approximate)

NOTES:

1. Only results from monitoring wells/piezometers sampled during the Corrective Measures Implementation (CMI) Long Term Monitoring (LTM) are included on this figure.
2. Yellow highlighting indicates exceedance of United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) or USEPA November 2018 Tapwater Regional Screening Level (RSL) Criteria, if no MCL is available.

ND = not detected
µg/L = micrograms per liter

NORTH

0 100 200

Feet

BB&E

Document Path: H:\IT\GIS\SSW\Collis\figures\02028025 - 2019 LTM Monitoring\2019 First semi-annual LTM\GIS Files\Figure 3 - SSW_Collis_Results_1stsatunit_April19.mxd

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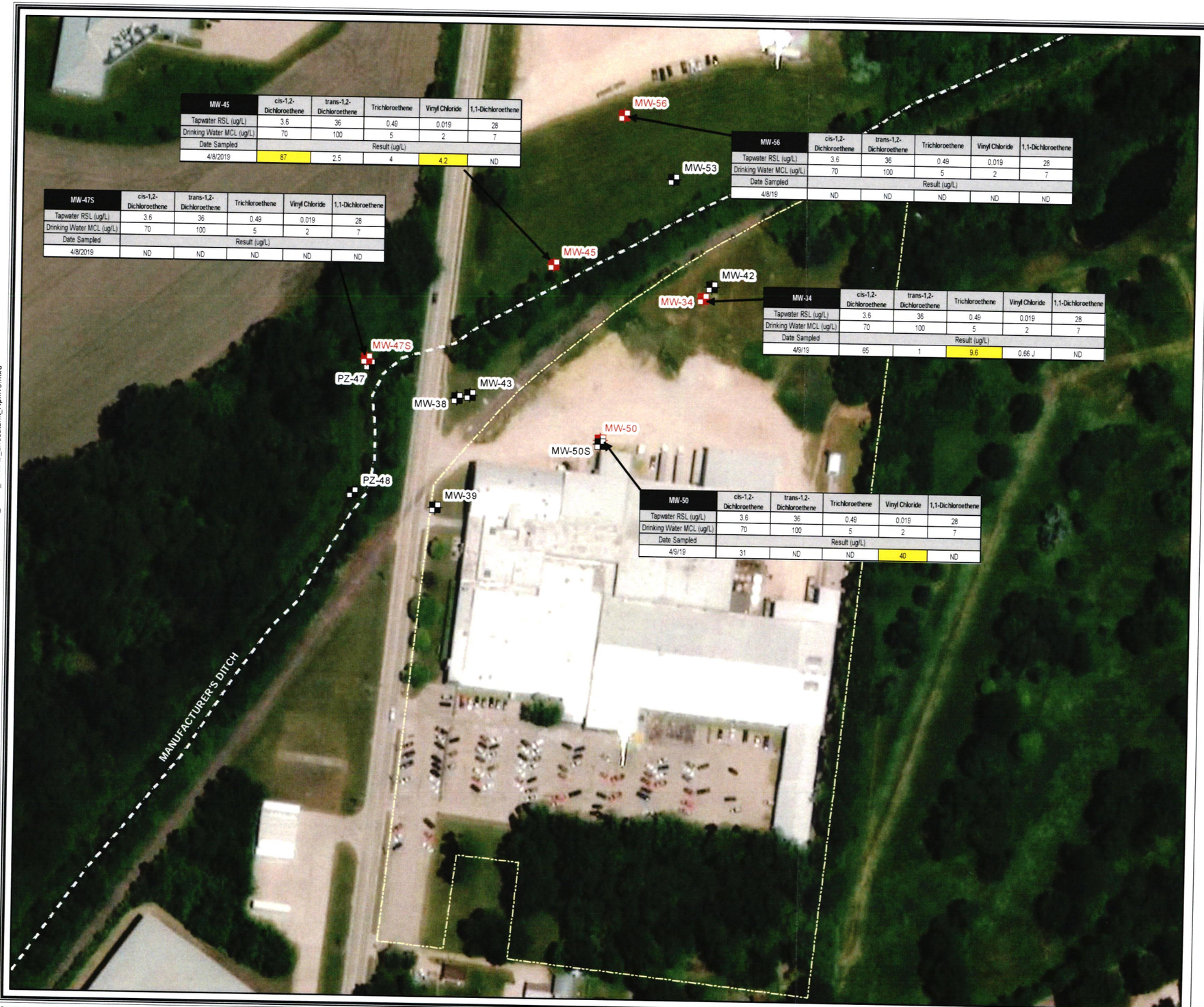
KVB - 7/2/2018



MW-45	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/8/2019	87	2.5	4	4.2	ND

MW-56	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/8/19	ND	ND	ND	ND	ND

MW-47S	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/8/2019	ND	ND	ND	ND	ND

MW-34	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/9/19	65	1	9.6	0.66 J	ND

MW-50	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	1,1-Dichloroethene
Tapwater RSL (ug/L)	3.6	36	0.49	0.019	28
Drinking Water MCL (ug/L)	70	100	5	2	7
Date Sampled	Result (ug/L)				
4/9/19	31	ND	ND	40	ND

Figure 4

Detections Summary
Second Saturated Unit
April 2019

Collis, Inc. Manufacturing Facility
Clinton, Iowa

Legend:

- Location Sampled
- Location Not Sampled
- Manufacturer's Ditch
- Property Boundary (Approximate)

NOTES:

1. Only results from monitoring wells sampled during the Corrective Measures Implementation (CMI) Long Term Monitoring (LTM) are included on this figure.
2. Yellow highlighting indicates exceedance of November 2018 United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) or USEPA Tapwater Regional Screening Level (RSL) Criteria, if no MCL is available.

ND = not detected
µg/L = micrograms per liter

NORTH
0 100 200
Feet

BB&E

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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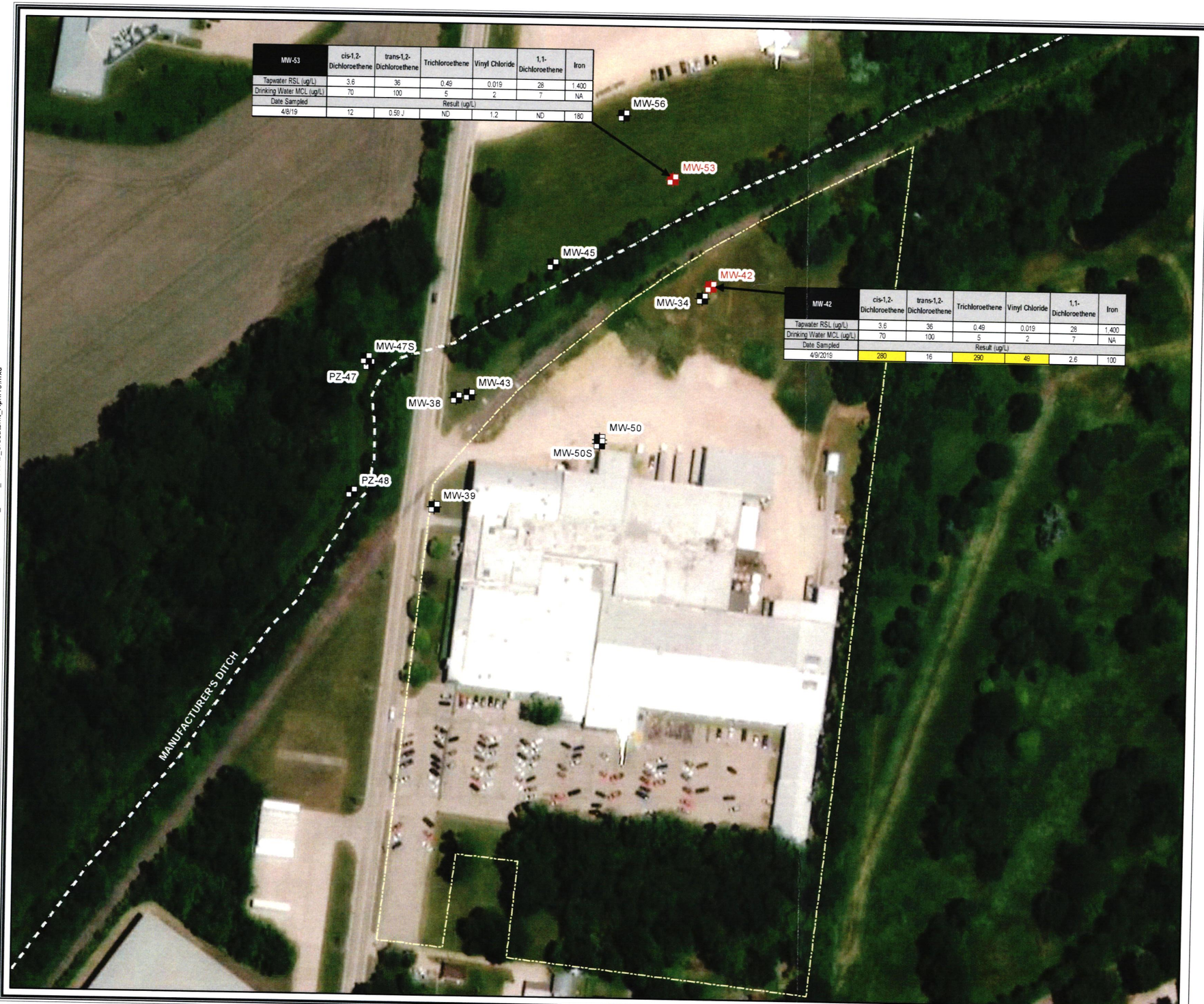

Figure 5

Detections Summary
Third Saturated Unit
April 2019

Collis, Inc. Manufacturing Facility
Clinton, Iowa

Legend:

- Location Sampled
- Location Not Sampled
- Manufacturer's Ditch
- Property Boundary (Approximate)

NOTES:

1. Only results from monitoring wells sampled during the Corrective Measures Implementation (CMI) Long Term Monitoring (LTM) are included on this figure.
2. Yellow highlighting indicates exceedance of the November 2018 United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) or USEPA Tapwater Regional Screening Level (RSL) Criteria, if no MCL is available.

J = the reported value is an estimate
NA = not available
ND = not detected
µg/L = micrograms per liter

NORTH

0 100 200

Feet

BB&E

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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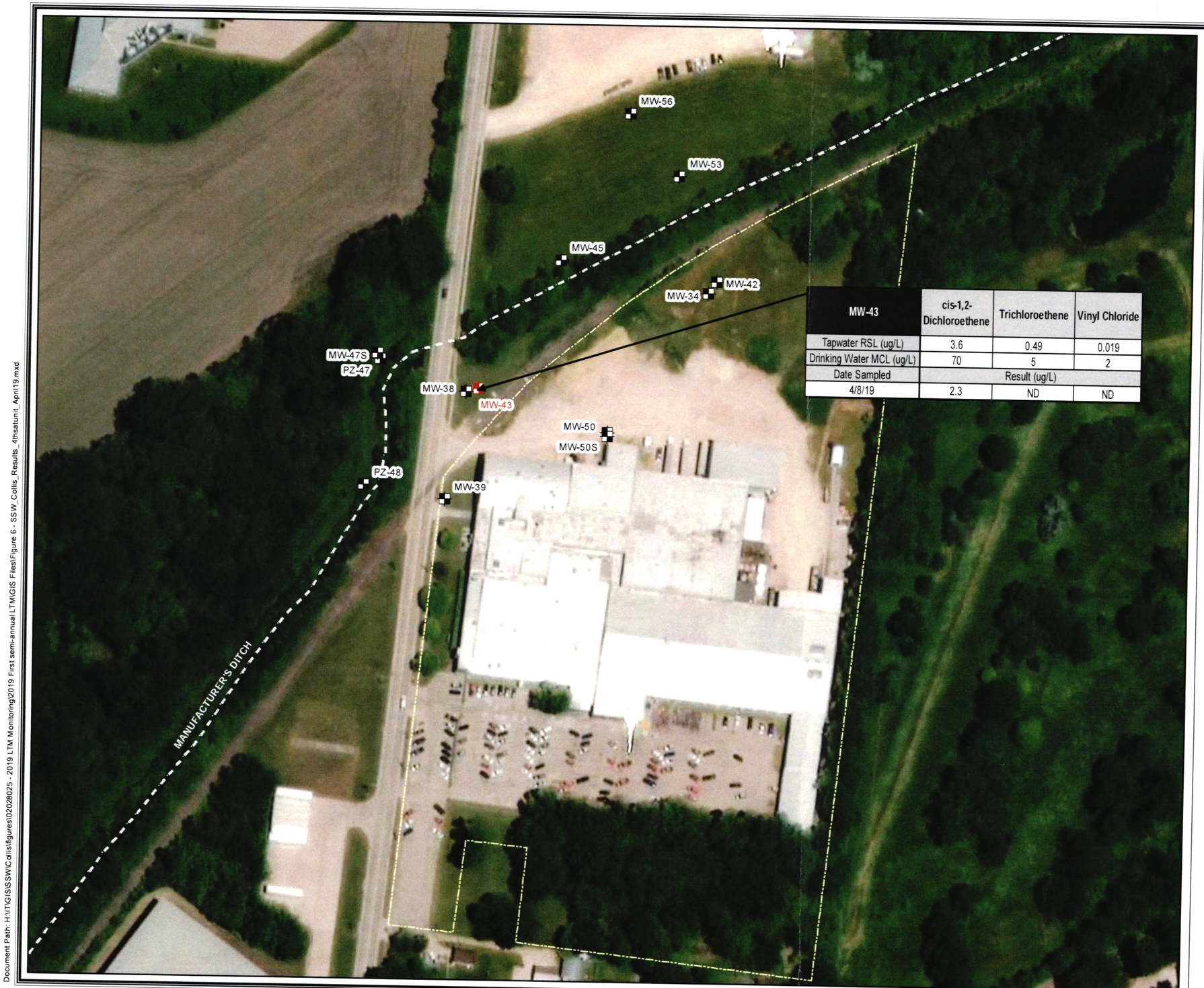

Figure 6

Detections Summary
Fourth Saturated Unit
April 2019

Collis, Inc. Manufacturing Facility
Clinton, Iowa

Legend:

- Location Sampled
- Location Not Sampled
- Manufacturer's Ditch
- Property Boundary (Approximate)

NOTES:

1. Only results from monitoring wells sampled during the Corrective Measures Implementation (CMI) Long Term Monitoring (LTM) are included on this figure.
2. Yellow highlighting indicates exceedance of the November 2018 United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) or USEPA Tapwater Regional Screening Level (RSL) Criteria, if no MCL is available.

ND = not detected
µg/L = micrograms per liter

NORTH

0 100 200

Feet

BB&E

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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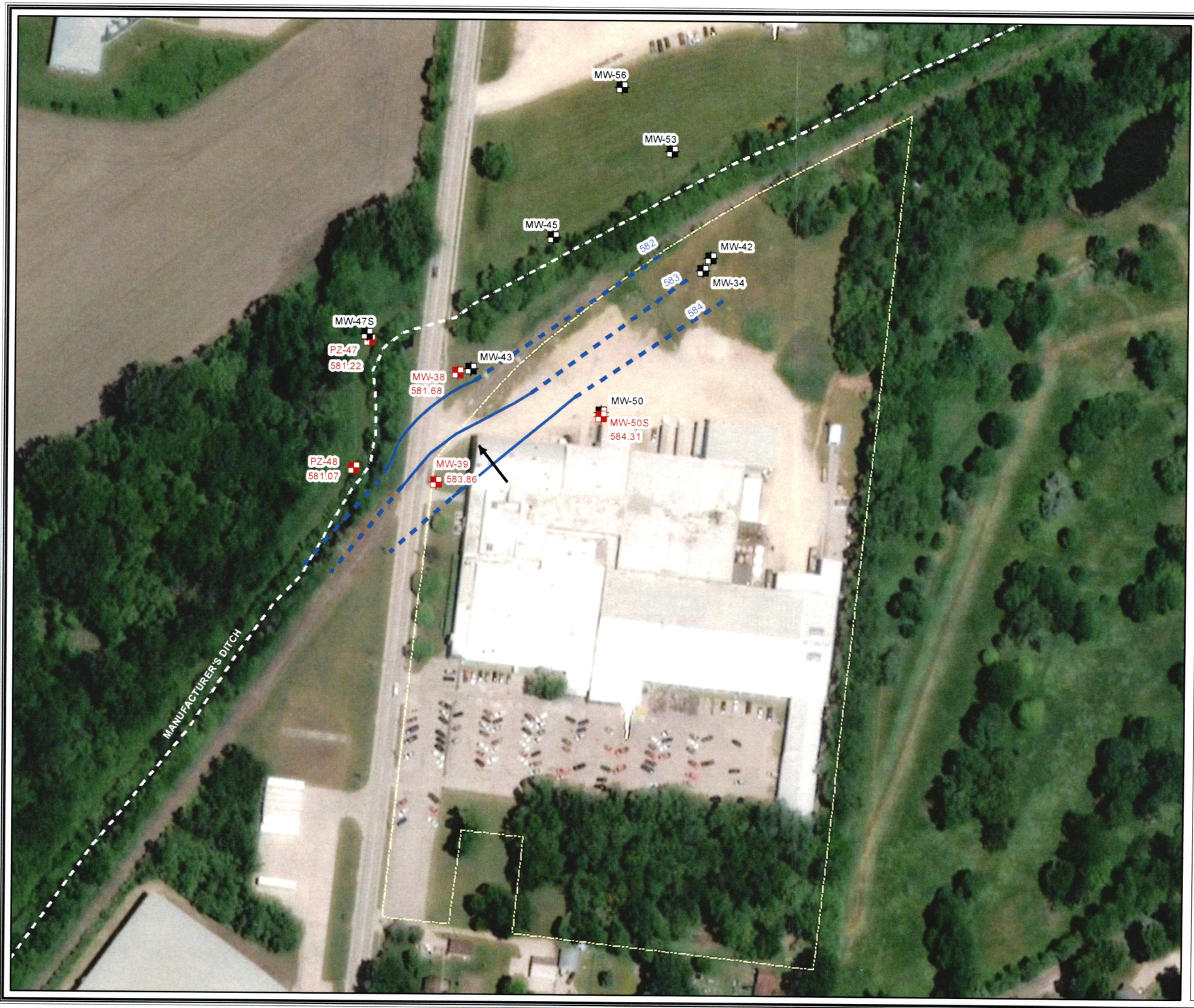

Figure 7

Potentiometric Surface Map
First Saturated Unit
April 2019

Collis, Inc. Manufacturing Facility
Clinton, Iowa

Legend:

- Monitoring Well/Piezometer Location (Elevations included)
- Monitoring Well/Piezometer Location (Elevations excluded)
- Water Table Elevation (dashed where inferred)
- Groundwater Flow Direction
- Manufacturer's Ditch
- Property Boundary (Approximate)

NOTES:

1. Monitoring wells shaded in black were excluded from use in generating this potentiometric surface map due to belonging to a different hydrological unit.

2. Monitoring wells MW-42 and MW-53 are located in the third saturated unit and MW-43 belongs to the deep bedrock hydrological unit. A separate figure was not created for these hydrological units as data from two wells is inadequate for accurate creation of groundwater contours.

3. Due to limitations of software interpolation, this drawing is intended to be used as an overview of the general groundwater flow conditions at the site. Groundwater contours may not pass through the included monitoring wells due to the display of groundwater contours at a constant interval. Contour placement represents an interpolation between two or more monitoring wells with known water levels, observed at the time of sampling; therefore, contours are inferred.

4. Groundwater contours developed using ArcGIS Desktop 10.6 Spatial Analyst Extension.

NORTH

0 100 200

Feet

BB&E

Document Path: H:\IT\GIS\SSW\Collis\figures\02028025 - 2019 LTM Monitoring\2019 First semi-annual LTM\GIS Files\Figure 7 - SSW_Collis_GWContours_1stsatunit_April19.mxd

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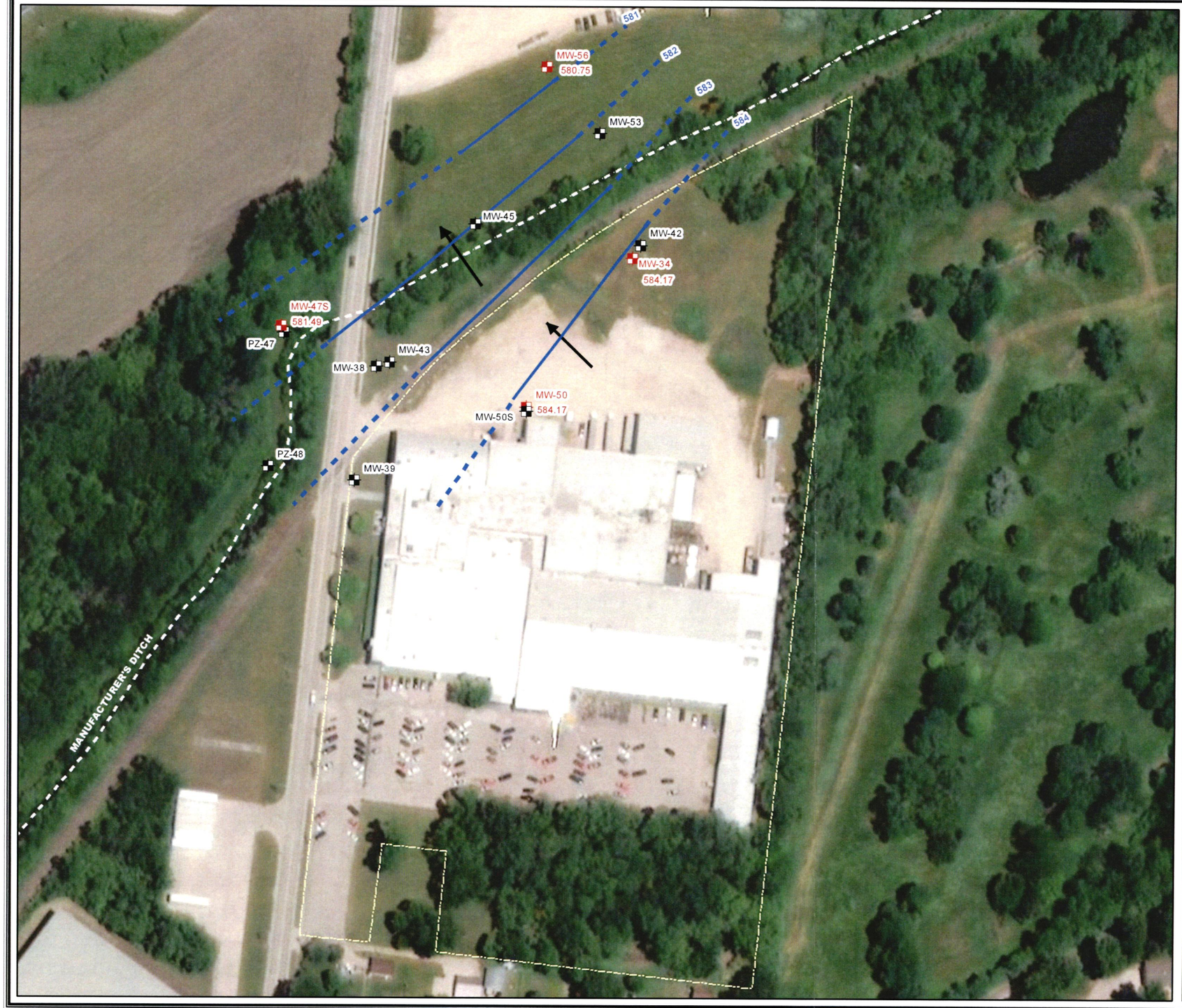

Figure 8

Potentiometric Surface Map
Second Saturated Unit
April 2019

Collis, Inc. Manufacturing Facility
Clinton, Iowa

Legend:

- Monitoring Well/Piezometer Location (Elevations included)
- Monitoring Well/Piezometer Location (Elevations excluded)
- Potentiometric Surface (dashed where inferred)
- Groundwater Flow Direction
- Manufacturer's Ditch
- Property Boundary (Approximate)

NOTES:

1. Monitoring wells shaded in black were excluded from use in generating this potentiometric surface map either due to belonging to a different hydrological unit, or due to artesian flow conditions. Wells with artesian flow conditions in the second saturated unit are identified as MW-45

2. Monitoring wells MW-42 and MW-53 are located in the third saturated unit and MW-43 belongs to the deep bedrock hydrological unit. A separate figure was not created for these hydrological units as data from two wells is inadequate for accurate creation of groundwater contours.

3. Due to limitations of software interpolation, this drawing is intended to be used as an overview of the general groundwater flow conditions at the site. Groundwater contours may not pass through the included monitoring wells due to the display of groundwater contours at a constant interval. Contour placement represents an interpolation between two or more monitoring wells with known water levels, observed at the time of sampling; therefore, contours are inferred.

4. Groundwater contours developed using ArcGIS Desktop 10.6 Spatial Analyst Extension.

NORTH

0 100 200

Feet

BB&E

Document Path: H:\IT\GIS\SSW\Collis\figures\02028025 - 2019 LTM Monitoring\2019 First semi-annual LTM\GIS Files\Figure 8 - SSW_Collis_GWContours_2ndupperunit_April19.mxd

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KVB - 4/18/2019

TABLES

TABLE 1
GROUNDWATER DATA SUMMARY
SSW COLLIS
CLINTON, IA

First Saturated Groundwater Unit										
MONITORING WELL	PARAMETERS (mg/L)	cis-1,2-DCE	trans-1,2-DCE	TCE	Vinyl Chloride	1,1-DCE	Lead	1,4-Dioxane	Methane	Ethane
	CAS #	156-59-2	156-60-5	79-01-6	75-01-4	75-35-4	7439-92-1	123-91-1	74-82-8	74-84-0
	EPA NOVEMBER 2018 RSL TAPWATER SCREENING CRITERIA (mg/L)	0.0036	0.036	0.00049	0.000019	0.028	0.015	0.00046	NA	NA
	EPA DRINKING WATER MCL (mg/L)	0.07	0.100	0.005	0.002	0.007	0.015	NA	NA	NA
MW-38	10/15/14	0.110	0.0070	ND	0.093	ND	NS	NS	NS	NS
	3/19/15	0.10	0.0052	ND	0.074	ND	NS	NS	NS	NS
	5/13/15	0.110	0.0053	ND	0.088	ND	NS	NS	NS	NS
	9/18/15	0.100	0.0055	ND	0.069	ND	NS	NS	NS	NS
	9/29/16	0.099	0.0054	ND	0.084	ND	NS	NS	NS	NS
	12/15/16	0.088	0.0032	ND	0.028	ND	NS	NS	NS	NS
	2/28/17	0.087	0.0032	ND	0.084	ND	NS	NS	NS	NS
	5/4/17	0.12	0.0077	ND	0.081	ND	NS	NS	NS	NS
	6/19/18	0.12	0.0052	ND	0.082	ND	NS	NS	NS	NS
	10/1/18	0.13	0.0056	ND	0.097	ND	NS	NS	NS	NS
	4/8/19	0.10	0.0032	ND	0.055	ND	NS	NS	NS	NS
MW-39	10/14/14	0.38	0.024	ND	0.16	0.0026	NS	NS	NS	NS
	3/19/15	0.3	0.017	ND	0.096	0.0018	NS	NS	NS	NS
	5/13/15	0.33	0.016	ND	0.11	0.0018	NS	NS	NS	NS
	9/18/15	0.25	0.016	ND	0.086	0.0019	NS	NS	NS	NS
	9/29/16	0.19	0.015	ND	0.082	0.0016	NS	NS	NS	NS
	12/15/16[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/2/17	0.26	0.011	ND	0.065	0.0012	NS	NS	NS	NS
	5/4/17	0.27	0.016	ND	0.093	0.0019	NS	NS	NS	NS
	6/19/18	0.29	0.016	ND	0.085	0.0019	NS	NS	NS	NS
	6/19/18 DUP	0.26	0.016	ND	0.074	0.0021	NS	NS	NS	NS
	10/2/18	0.21	0.011	ND	0.058	0.0012	NS	NS	NS	NS
	4/9/19	0.21	0.0088	ND	0.075	0.001	NS	NS	NS	NS
MW-50S	10/13/14	ND	ND	ND	0.0068	ND	NS	NS	NS	NS
	3/18/15	0.0056	ND	ND	0.046	ND	NS	NS	NS	NS
	5/13/15	0.0079	ND	ND	0.072	ND	NS	NS	NS	NS
	9/17/15	0.0086	ND	ND	0.075	ND	NS	NS	NS	NS
	9/29/16	0.0068	ND	ND	0.042	ND	NS	NS	NS	NS
	12/15/16	0.0098	ND	ND	0.043	ND	NS	NS	NS	NS
	3/1/17	0.0084	ND	ND	0.025	ND	NS	NS	NS	NS
	3/1/17 DUP	0.0088	ND	ND	0.027	ND	NS	NS	NS	NS
	5/4/17	0.015	ND	ND	0.052	ND	NS	NS	NS	NS
	6/20/18	0.0081	ND	ND	0.045	ND	NS	NS	NS	NS
	10/2/18	0.0058	ND	ND	0.030	ND	NS	NS	NS	NS
	4/9/19	0.0077	ND	ND	0.037	ND	NS	NS	NS	NS
PZ-47	3/12/12	NS	NS	NS	NS	NS	3.9	NS	NS	NS
	6/12/12	NS	NS	NS	NS	NS	1.1	NS	NS	NS
	10/13/14[2]	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/16/15	NS	NS	NS	NS	NS	0.098	NS	NS	NS
	9/28/16	ND	ND	ND	ND	ND	NS	NS	NS	NS
	12/13/16	ND	ND	ND	ND	ND	NS	NS	NS	NS
	3/2/17	ND	ND	ND	ND	ND	NS	NS	NS	NS
	5/2/17	ND	ND	ND	ND	ND	NS	NS	NS	NS
	6/18/18	ND	ND	ND	ND	ND	NS	NS	NS	NS
	10/1/18	ND	ND	ND	ND	ND	NS	NS	NS	NS
	10/1/18 DUP	ND	ND	ND	ND	ND	NS	NS	NS	NS
	4/8/19	ND	ND	ND	ND	ND	NS	NS	NS	NS
PZ-48	9/28/16	ND	ND	ND	ND	ND	NS	NS	NS	NS
	12/13/16	ND	ND	ND	ND	ND	NS	NS	NS	NS
	3/2/17	ND	ND	ND	ND	ND	NS	NS	NS	NS
	5/2/17	ND	ND	ND	ND	ND	NS	NS	NS	NS
	6/18/18	ND	ND	ND	ND	ND	NS	NS	NS	NS
	10/1/18	ND	ND	ND	ND	ND	NS	NS	NS	NS
	4/8/19	ND	ND	ND	ND	ND	NS	NS	NS	NS

Notes:
Exceeds EPA Region VI Drinking Water MCLs or November 2018 (most current) Tapwater RSLs (Target Risk=1E-06, Hazard Quotient=0.1), if no MCL exists.
[1] Not sampled due to inclement weather.
[2] PZ-47 was damaged and could not be sampled.
Only compounds that were detected in one or more samples are shown in the table.
Phase I, II, and III detections are also shown on this table. Phase I was conducted in March, June, September, and November 2012. Phase II was conducted October 2014, March, May, and September 2015. Phase III was conducted September and December 2016, February/March and May 2017. The 2018 first-semiannual LTM event was conducted June 2018 and the second semi-annual LTM event was conducted October 2018. The 2019 first semi-annual LTM event was conducted April 2019.
mg/L = milligrams per liter
CAS - unique numerical identifier assigned by Chemical Abstracts Service (CAS)
DCE - Dichloroethene
EPA - United States Environmental Protection Agency
MCL - Maximum Contaminant Level
MW - Monitoring Well
RSL - Regional Screening Level
NA - Not Available
ND - Non-Detect
NS - Not Sampled
PZ - Piezometer
TCE- Trichloroethene

TABLE 1
GROUNDWATER DATA SUMMARY
COLLIS, INC.
CLINTON, IA

Second Saturated Groundwater Unit															
	PARAMETERS (mg/L)	cis-1,2-DCE	trans-1,2-DCE	TCE	Vinyl Chloride	1,1-DCE	1,4-Dioxane	Methane	Ethane	Ethene	Iron	Manganese	Chloride	Sulfate	Nitrogen, Nitrate-Nitrite
	CAS #	156-59-2	156-60-5	79-01-6	75-01-4	75-35-4	123-91-1	74-82-8	74-84-0	74-85-1	7439-89-6	7439-96-5	10043-52-4	18785-72-3	NA
	EPA NOVEMBER 2018 RSL TAPWATER SCREENING CRITERIA (mg/L)	0.0036	0.036	0.00049	0.000019	0.028	0.00046	NA	NA	NA	1.40	NA	NA	NA	NA
MONITORING WELL	EPA DRINKING WATER MCL (mg/L)	0.07	0.100	0.00500	0.0020	0.007	NA	NA	NA	NA	NA	NA	NA	NA	10
MW-34	3/16/12	0.091	0.0033	0.0170	ND	ND	NS	0.13	0.011	NS	NS	NS	NS	NS	NS
	6/13/12	0.1	0.0037	0.0270	0.00690	ND	NS	NS	0.0024	NS	NS	NS	NS	NS	NS
	9/26/2012	0.039	0.0018	0.0200	ND	ND	NS	0.24	0.013	NS	NS	NS	NS	NS	NS
	11/30/12	0.033	0.0013	0.0160	ND	ND	NS	ND	ND	NS	NS	NS	NS	NS	NS
	10/17/14	0.084	0.0031	0.0230	0.00950	ND	ND	0.19	0.012	ND	0.14	0.33	72	69	0.028
	3/19/15	0.09	0.0029	0.0210	0.00670	ND	ND	0.15	0.011	ND	ND	0.27	68	78	0.12
	5/13/15	0.089	0.0026	0.0170	0.02000	ND	ND	0.28	0.017	0.00091 J	ND	0.29	78	78	ND
	9/17/15	0.11	0.0035	0.0280	0.00400	ND	0.00071	0.24	0.012	ND	0.02 J	0.44	68	75	0.019 J
	9/29/16	0.1	0.0035	0.0240	0.00460	ND	ND	0.38	0.02	ND	0.051 J	0.51	80	77	ND
	12/15/16	0.12	0.0036	0.0230	0.00230	ND	ND	0.21	0.011	ND	0.03 J	0.35	60	68	0.015 J
	12/15/2016 DUP	0.13	0.0036	0.0240	0.00260	ND	ND	0.22	0.011	ND	0.018 J	0.38	42	68	ND
	3/1/17	0.12	0.0021	0.0170	0.00270	0.00045 J	ND	0.18	0.012	ND	0.0059 J	0.074	77	74	0.033
	5/4/17	0.11	0.0040	0.0140	0.01500	ND	ND	0.32	0.02	ND	0.055 J	0.75	130	100	ND
	5/4/2017 DUP	0.12	0.0040	0.0130	0.01400	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/19/18	0.1	0.0024	0.0160	0.00240	ND	ND	0.23	0.016	ND	0.033 J	0.69	77	71	ND
	10/1/18	0.086	0.0031	0.0160	0.00150	0.00067 J	ND	0.19	0.017	0.0026 J	0.019 J	0.51	45	68	ND
	4/9/19	0.065	0.0010	0.0096	0.00066 J	ND	ND	0.044	ND	ND	ND	0.12	75	65	0.82
MW-45	03/16/12	0.019	0.0011	0.00420	ND	ND	NS	ND	ND	NS	NS	NS	NS	NS	NS
	06/13/12	0.015	ND	0.00400	ND	ND	NS	NS	ND	NS	NS	NS	NS	NS	NS
	09/26/12	0.01	ND	0.00350	ND	ND	NS	0.025	ND	NS	NS	NS	NS	NS	NS
	11/30/12	0.01	ND	0.00400	ND	ND	NS	ND	ND	NS	NS	NS	NS	NS	NS
	10/16/14	0.032	0.0013	0.00520	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	03/18/15	0.011	ND	0.00360	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	05/12/15	0.02	0.00096 J	0.00590	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	09/15/15	0.023	ND	0.00460	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	09/28/16	0.084	0.0029	0.00530	0.00420	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/28/16 DUP	0.083	0.0028	0.00530	0.00420	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/14/16	0.031	ND	0.00310	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/14/16 DUP	0.035	ND	0.00430	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	02/28/17	0.019	0.00081 J	0.00480	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	05/04/17	0.067	0.00250	0.00620	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	06/19/18	0.048	0.0015	0.00420	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	10/2/18	0.04	0.0014	0.00400	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	4/8/19	0.087	0.0025	0.00400	0.0042	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

Exceeds EPA Region VI Drinking Water MCLs or November 2018 (most current) Tapwater RSLs (Target Risk=1E-06, Hazard Quotient=0.1), if no MCL exists.

[1] Not sampled due to inclement weather.

Only compounds that were detected in one or more samples are shown in the table.

Phase I, II, and III detections are shown on this table. Phase I was conducted in March, June, September, and November 2012. Phase II was conducted October 2014, March, May, and September 2015. Phase III was conducted September and December 2016, February/March and May 2017. The 2018 first semi-annual LTM event was conducted June 2018 and the second semi-annual LTM event was conducted October 2018. The 2019 first semi-annual LTM event was conducted April 2019.

mg/L = milligrams per liter

CAS - unique numerical identifier assigned by Chemical Abstracts Service (CAS)

DCE - Dichloroethene

EPA - United States Environmental Protection Agency

MCL - Maximum Contaminant Level

MW - Monitoring Well

RSL - Regional Screening Level

NA - Not Available

ND - Non-Detect

NS - Not Sampled

PZ - Piezometer

TCE- Trichloroethene

TABLE 1
GROUNDWATER DATA SUMMARY
COLLIS, INC.
CLINTON, IA

Second Saturated Groundwater Unit															
	PARAMETERS (mg/L)	cis-1,2-DCE	trans-1,2-DCE	TCE	Vinyl Chloride	1,1-DCE	1,4-Dioxane	Methane	Ethane	Ethene	Iron	Manganese	Chloride	Sulfate	Nitrogen, Nitrate-Nitrite
	CAS #	156-59-2	156-60-5	79-01-6	75-01-4	75-35-4	123-91-1	74-82-8	74-84-0	74-85-1	7439-89-6	7439-96-5	10043-52-4	18785-72-3	NA
	EPA NOVEMBER 2018 RSL TAPWATER SCREENING CRITERIA (mg/L)	0.0036	0.036	0.00049	0.000019	0.028	0.00046	NA	NA	NA	1.40	NA	NA	NA	NA
MONITORING WELL	EPA DRINKING WATER MCL (mg/L)	0.07	0.100	0.00500	0.0020	0.007	NA	NA	NA	NA	NA	NA	NA	NA	10
MW-47S	5/5/10	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/14/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/14/14	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/16/15	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/11/15	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/15/15	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/28/16	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/15/16[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/28/17	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/2/17	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/19/18	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/1/18	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/8/19	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-50	5/4/10	0.0468	ND	ND	0.0732	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/15/14	0.042	ND	ND	0.057	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/15	0.028	ND	ND	0.043	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/13/15	0.029	ND	ND	0.039	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/17/15	0.018	ND	ND	0.052	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/29/16	0.031	ND	ND	0.045	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/15/16	0.035	ND	ND	0.056	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/1/17	0.032	ND	ND	0.039	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/17	0.044	ND	ND	0.065	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/20/18	0.028	ND	ND	0.043	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/1/18	0.027	ND	ND	0.040	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/9/19	0.031	ND	ND	0.040	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-56	10/17/14	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	3/17/15	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	5/12/15	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	9/17/15	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
	9/29/16	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/15/16[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/28/17	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/2/17	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/19/18	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/2/18	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/8/19	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/8/2019 (DUP)	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:
Exceeds EPA Region VI Drinking Water MCLs or November 2018 (most current) Tapwater RSLs (Target Risk=1E-06, Hazard Quotient=0.1), if no MCL exists.
[1] Not sampled due to inclement weather.
Only compounds that were detected in one or more samples are shown in the table.
Phase I, II, and III detections are also shown on this table. Phase I was conducted in March, June, September, and November 2012. Phase II was conducted October 2014, March, May, and September 2015. Phase III was conducted September and December 2016, February/March and May 2017. The 2018 first-semiannual LTM event was conducted June 2018 and the second semi-annual LTM event was conducted October 2018. The 2019 first semi-annual LTM event was conducted
mg/L = milligrams per liter
CAS - unique numerical identifier assigned by Chemical Abstracts Service (CAS)
DCE - Dichloroethene
EPA - United States Environmental Protection Agency
MCL - Maximum Contaminant Level
MW - Monitoring Well
RSL - Regional Screening Level
NA - Not Available
ND - Non-Detect
NS - Not Sampled
PZ - Piezometer
TCE- Trichloroethene

TABLE 1
GROUNDWATER DATA SUMMARY
SSW COLLIS
CLINTON, IA

Fourth Saturated Groundwater Unit				
	PARAMETERS (mg/L)	cis-1,2-DCE	TCE	Vinyl Chloride
	CAS #	156-59-2	79-01-6	75-01-4
	EPA NOVEMBER 2018 RSL TAPWATER SCREENING CRITERIA (mg/L)	0.0036	0.00049	0.000019
MONITORING WELL	EPA DRINKING WATER MCL (mg/L)	0.0700	0.005	0.002
MW-43	10/15/14	0.0068	ND	ND
	3/18/15	0.0056	ND	0.0015
	5/12/15	0.0019	ND	0.0019
	9/16/15	0.0013	ND	0.0039
	9/29/16	0.0045	ND	0.0022
	12/15/16	ND	ND	ND
	2/28/17	0.00058 J	ND	0.0027
	5/4/17	0.0049	ND	ND
	6/19/18	0.003	ND	0.0024
	10/1/18	0.0028	ND	0.0027
	4/8/19	0.0023	ND	ND

Notes:

Exceeds EPA Region VI Drinking Water MCLs or November 2018 (most current) Tapwater RSLs (Target Risk=1E-06, Hazard Quotient=0.1), if no MCL exists.

Only compounds that were detected in one or more samples are shown in the table.

Phase I, II, and III detections are also shown on this table. Phase I was conducted in March, June, September, and November 2012. Phase II was conducted October 2014, March, May, and September 2015. Phase III was conducted September and December 2016, February/March and May 2017. The 2018 first-semiannual LTM event was conducted June 2018 and the second semi-annual LTM event was conducted October 2018. The 2019 first semi-annual LTM event was conducted April 2019.

mg/L = millograms per liter
CAS - unique numerical identifier assigned by Chemical Abstracts Service (CAS)
DCE - Dichloroethene
EPA - United States Environmental Protection Agency
MCL - Maximum Contaminant Level
MW - Monitoring Well
RSL - Regional Screening Level
NA - Not Available
ND - Non-Detect
NS - Not Sampled
PZ - Piezometer
TCE- Trichloroethene

TABLE 2
WATER ELEVATION SUMMARY
2019 FIRST-SEMI ANNUAL LTM GROUNDWATER MONITORING
COLLIS, INC., CLINTON IOWA

Well ID	TOC ELEVATION (ft amsl)	Constructed Well Depth (ft bgs)	Nominal Screen Interval (ft bgs)	Time	DTW (from TOC)	Elevation (ft amsl)
Measurement Date:				4/8/19		
MW-34	589.29	31.6	25-30	825	5.12	584.17
MW-38	585.47	9.95	5-10	805	3.79	581.68
MW-39	587.47	13.91	9-14	800	3.61	583.86
MW-42	589.25	50.2	42-47	830	4.50	584.75
MW-43	585.21	99.38	94.75-99.75	810	0.0	585.21
MW-45*	582.41	25.59	19-24	835	0.0	582.41
MW-47S	583.17	17.93	13-18	900	1.68	581.49
MW-50	587.27	24.77	20-25	815	3.10	584.17
MW-50S	587.51	12.28	7.5-12.5	820	3.20	584.31
MW-53*	582.73	52.24	45-50	840	0.0	582.73
MW-56	582.33	30	25-30	845	1.58	580.75
PZ-47	583.17	10.89	1-11	855	1.95	581.22
PZ-48	584.27	10.65	1-11	850	3.20	581.07

Notes:

* Artesian conditions identified

NA - Not available

DTW - Depth to water

TOC - Top of casing

ft bgs - feet below ground surface

ft amsl - feet above mean sea level

Table 3
Groundwater Field Parameter Readings
2019 First Semi-Annual LTM Groundwater Monitoring
Collis Inc., Clinton, Iowa

Monitoring Well	Collection Date	Temperature (°C)	pH (S.U.)	Specific Conductivity (mS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
PZ-47	9/28/16	17.61	6.61	0.962	0.38	5.3	-30.6
	12/13/16	7.61	6.65	1.05	6.13	1000	-79.6
	2/28/2017*	NA	NA	NA	NA	NA	NA
	5/2/17	10.36	6.53	0.791	2.48	300	35.1
	6/18/2018	19.11	7.11	0.953	9.22	44.7	59.9
	10/1/2018	15.61	7.52	0.926	0	46.2	-76.5
	4/8/2019	7.17	6.26	0.644	2.97	7.6	24.8
PZ-48	9/28/16	16.61	6.73	0.902	1.82	75.3	-1.8
	12/13/16	10.78	6.9	0.873	5.48	OOR	-270
	2/28/17	9.67	6.65	0.748	33.1	167	151.8
	5/2/17	11.76	6.77	0.595	4.08	5.45	79.2
	6/18/18	20.55	7.45	0.677	9.8	46.8	53.9
	10/1/18	16.76	7.48	0.631	3.18	44.2	24.2
	4/8/19	5.7	6.49	0.458	4.2	26.6	52
MW-34	9/29/16	14.76	7	1.183	0.12	1.75	-46.8
	12/15/16	11.7	7.08	0.999	2.55	1.8	228.6
	3/1/17	11.09	7.04	0.714	0.64	19	-33.2
	5/4/17	12.45	7.49	1.014	0.79	1.67	-11.9
	6/19/18	13.83	7.17	0.975	0.46	1.36	0.7
	10/1/18	15.04	7.84	0.835	0.9	2.4	-21.6
	4/9/19	11.71	6.9	0.875	1.59	1.37	51.6
MW-38	9/29/16	20.21	6.84	1.655	0.18	11	-81.4
	12/15/16	11.99	6.88	1.364	3.48	10.2	77
	2/28/17	9.2	6.48	1.092	0.23	10.9	-65.8
	5/4/17	12.08	7.13	1.588	0.99	2.6	-6.2
	6/19/18	15.28	6.91	1.642	0.44	5.17	-29.9
	10/1/18	19.28	7.34	1.857	0.34	26.4	-26.3
	4/8/19	9.11	6.7	1.176	1.7	3.01	21.8
MW-39	9/29/16	18.04	6.74	2.774	0.15	6.8	-76.5
	12/15/16	NS	NS	NS	NS	NS	NS
	3/2/17	12.99	6.76	2.035	0.55	18.1	-46.2
	5/4/17	14.36	6.98	2.614	1.18	71.5	-26
	6/19/18	15.26	6.84	2.656	0.58	5.07	-18.2
	10/2/18	16.8	7.38	2.45	0.02	6.5	-37.0
	4/9/19	13.52	6.6	1.965	0.63	0.92	-17.2
MW-42	9/27/16	15.06	6.68	1.027	0.17	1.29	-18.3
	12/13/16	9.9	7.13	1.085	1.44	3.3	-43.1
	3/2/17	11.29	7.11	0.784	0.57	1.34	-38.8
	5/4/17	13.66	7.44	1.047	1.26	0.9	-6.9
	6/19/18	14.25	7.16	1.111	0.31	4.49	37.2
	10/1/18	14.56	7.98	0.932	0.9	6.2	29.8
	4/9/19	13.11	7.03	0.883	2.59	1.36	-10.4
MW-43	9/29/16	14.99	7.45	0.667	0.13	11.2	-144.9
	12/15/16	11.56	7.65	0.639	0.56	1	-189.2
	2/28/17	13.21	7.8	0.478	0.36	4.82	-142.3
	5/4/17	13.1	7.61	0.655	0.79	1.43	-25.9
	6/19/18	17.39	7.6	0.654	0.55	2.71	-142.6
	10/1/18	15.33	8.47	0.549	0.32	4.5	-142.6
	4/8/19	14.57	7.35	0.57	0.7	1.59	-60.3
MW-45	9/28/16	13.15	7.16	0.856	3.28	39	196.3
	12/14/16	9.95	7.11	0.863	0.5	18.4	165.2
	2/28/17	12.07	7.17	0.639	0.25	39.2	16.5
	5/4/17	11.75	7.4	0.838	0.71	6.9	9.1
	6/19/18	12.64	7.21	0.831	0.17	4.01	-1.5
	10/2/18	14.22	8.07	0.651	0.02	9.1	58.0
	4/8/19	11.52	6.88	0.671	3.05	10.6	71.9
MW-47s	9/28/16	12.77	6.97	0.736	1.02	10.6	-100
	12/15/16	NS	NS	NS	NS	NS	NS
	2/28/17	9.91	7.01	0.47	2.11	30.7	-51.1
	5/2/17	9.92	6.87	0.602	1.8	28.1	-62.8
	6/19/18	11.57	7.12	0.679	0.31	14.7	-68.8
	10/1/18	13.85	7.92	0.608	0	0.09	-39.0
	4/8/19	9.19	6.51	0.532	1.76	4.7	-64.2
MW-50	9/29/16	15.87	6.95	2.422	0.2	9.19	-102.3
	12/15/16	13.75	6.82	2.529	0.4	1.43	-97.1
	3/1/17	12.55	6.99	1.931	0.48	15	-92.6
	5/4/17	13.54	7.23	2.496	1.18	1.03	-55.6
	6/20/18	13.75	7.04	2.53	0.5	4.62	-0.1
	10/1/18	14.77	7.71	0.1932	0.44	20.2	53.7
	4/9/19	12.59	6.89	1.99	0.99	4.62	-36.1
MW-50S	9/29/16	17.09	7.01	2.065	0.22	39.3	-105.2
	12/15/16	13.34	6.89	2.08	0.5	16.6	-99.8
	3/1/17	10.32	7.12	1.192	0.71	2.79	-29.1
	5/4/15	11.9	7.35	1.8	0.92	5.65	-82.8
	6/20/18	13.65	7.15	1.711	0.27	2.18	-14.3
	10/2/18	15.73	7.66	1.04	0.1	14.2	-8.0
	4/9/19	10.66	6.88	1.307	1.4	4.72	-12.8

Table 3
Groundwater Field Parameter Readings
2019 First Semi-Annual LTM Groundwater Monitoring
Collis Inc., Clinton, Iowa

Monitoring Well	Collection Date	Temperature (°C)	pH (S.U.)	Specific Conductivity (mS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
MW-53	9/29/16	11.78	7.35	0.756	0.27	15.5	-96.1
	12/14/16	9.3	7.35	0.761	0.4	1	-75.5
	2/28/17	11.51	7.29	0.5444	0.29	6.53	-85.8
	5/4/17	11.97	7.55	0.735	0.6	1.2	-40.2
	6/19/18	13.69	7.35	0.724	0.22	1.66	-18.4
	10/2/18	11.1	8.11	0.559	0.07	9	-63.0
	4/8/19	12.19	7.06	0.596	3.71	2.06	-46.7
MW-56	9/29/16	13.16	6.95	0.739	1.54	75.3	-94.4
	12/15/16	NS	NS	NS	NS	NS	NS
	2/28/17	11.12	6.97	0.513	0.31	46	-93.5
	5/2/17	11.24	6.81	0.632	1.97	85.9	-101.2
	6/19/18	13.44	7.02	0.691	0.17	2.6	-72.2
	10/2/18	13.61	7.59	0.531	0.35	1.7	-73.0
	4/8/19	9.89	6.67	0.512	10.01	16.7	-36.0

Notes:
* PZ-47 dried up before field parameters could be collected.
Phase III groundwater field parameters are included in the table. Phase III was conducted during Q3 and Q4 of 2016 and Q1 and Q2 of 2017
The 2018 first semi-annual (SA) long term monitoring (LTM) event was conducted in June 2018, the 2018 second SA LTM event was conducted in October 2018, and the 2019 first SA LTM event was conducted in April 2019.
Only wells included in the LTM are shown in the table
°C - Degrees Celsius
mg/L - milligram per liter
mS/cm - milliSiemens per centimeter
mV - millivolt
NM - Not Measured
NS - not sampled
NTU - Nephelometric Turbidity Unit
ORP - Oxidation Reduction Potential
S.U. - pH Standard Units
OOR - Out of Range on the turbidity meter (1000+NTU)

TABLE 4
VAPOR INTRUSION SCREENING
COLLIS, INC.
CLINTON, IA

PARAMETERS (ug/L)		cis-1,2-DCE	trans-1,2-DCE	TCE	Vinyl Chloride	1,1-DCE
CAS #		156-59-2	156-60-5	79-01-6	75-01-4	75-35-4
VISL Target Groundwater Concentration (µg/L) TCR:10^{-6} THQ:0.1		NA	NA	1.9**	2.45	82.1
VISL Target Groundwater Concentration (µg/L) TCR:10^{-5} THQ:1		NA	NA	19**	24.5	821
Monitoring Well	**Sample Date**	**First Saturated Groundwater Unit**				
MW-38	9/29/16	99	5.4	ND	84	ND
	12/15/16	88	3.2	ND	28	ND
	2/28/17	87	3.2	ND	84	ND
	5/4/17	120	7.7	ND	81	ND
	6/19/18	120	5.2	ND	82	ND
	10/1/18	130	5.6	ND	97	ND
	4/8/19	100	3.2	ND	55	ND
MW-39	9/29/16	190	15	ND	82	1.6
	12/15/2016*	NS	NS	NS	NS	NS
	3/2/17	260	11	ND	65	1.2
	5/4/17	270	16	ND	93	1.9
	6/19/18	290	16	ND	85	1.9
	6/19/18 DUP	260	16	ND	74	2.1
	10/2/18	210	11	ND	58	1.2
	4/9/19	210	8.8	ND	75	1.9
MW-50S	9/29/16	6.8	ND	ND	42	ND
	12/15/16	9.8	ND	ND	43	ND
	3/1/17	8.4	ND	ND	25	ND
	3/1/17 DUP	8.8	ND	ND	27	ND
	5/4/17	15	ND	ND	52	ND
	6/20/18	8.1	ND	ND	45	ND
	10/2/18	5.8	ND	ND	30	ND
	4/9/19	7.7	ND	ND	37	ND
PZ-47	9/28/16	ND	ND	ND	ND	ND
	12/13/16	ND	ND	ND	ND	ND
	3/2/17	ND	ND	ND	ND	ND
	5/2/17	ND	ND	ND	ND	ND
	6/18/18	ND	ND	ND	ND	ND
	10/1/18	ND	ND	ND	ND	ND
	10/1/18 DUP	ND	ND	ND	ND	ND
	4/8/19	ND	ND	ND	ND	ND
PZ-48	9/28/16	ND	ND	ND	ND	ND
	12/13/16	ND	ND	ND	ND	ND
	3/2/17	ND	ND	ND	ND	ND
	5/2/17	ND	ND	ND	ND	ND
	6/18/18	ND	ND	ND	ND	ND
	10/1/18	ND	ND	ND	ND	ND
	4/8/19	ND	ND	ND	ND	ND
		Second Saturated Groundwater Unit				
MW-34	9/29/16	100	3.5	24	4.6	ND
	12/15/16	120	3.6	23	2.3	ND
	12/15/2016 DUP	130	3.6	24	2.6	ND
	3/1/17	120	2.1	17	2.7	0.45 J
	5/4/17	120	4.0	14	15	ND
	6/19/18	100	2.4	16	2.4	ND
	10/1/18	86	3.1	16	1.5	0.67 J
	4/9/19	65	1	9.6	0.66 J	ND
MW-45	9/28/16	84	9	5.3	4.2	ND
	12/14/16	31	ND	3.1	ND	ND
	12/14/2016 Dup	35	ND	4.3	ND	ND
	2/28/17	19	0.81 J	4.8	ND	ND
	5/4/17	67	2.5	6.2	ND	ND
	6/19/18	48	1.5	4.2	ND	ND
	10/2/18	40	1.4	4.0	ND	ND
	4/8/19	87	2.5	4.0	4.2	ND
MW-47S	9/28/16	ND	ND	ND	ND	ND
	12/15/16*	NS	NS	NS	NS	NS
	2/28/17	ND	ND	ND	ND	ND
	5/2/17	ND	ND	ND	ND	ND
	6/19/18	ND	ND	ND	ND	ND
	10/1/18	ND	ND	ND	ND	ND
	4/8/19	ND	ND	ND	ND	ND
MW-50	9/29/16	31	ND	ND	45	ND
	12/15/16	35	ND	ND	56	ND
	3/1/17	32	ND	ND	39	ND
	5/4/17	44	ND	ND	65	ND
	6/19/18	28	ND	ND	43	ND
	10/1/18	27	ND	ND	40	ND
	4/9/19	31	ND	ND	40	ND
MW-56	9/29/16	ND	ND	ND	ND	ND
	12/15/2016*	NS	NS	NS	NS	NS
	2/28/17	ND	ND	ND	ND	ND
	5/2/17	ND	ND	ND	ND	ND
	6/19/18	ND	ND	ND	ND	ND
	10/2/18	ND	ND	ND	ND	ND
	4/8/19	ND	ND	ND	ND	ND
	4/8/19 DUP	ND	ND	ND	ND	ND

Notes:
Exceeds VISL (Target Cancer Risk = 1E-06, Target Hazard Quotient = 0.1)
Exceeds VISL (Target Cancer Risk = 1E-05, Target Hazard Quotient = 1)
Phase III results are also included in the table. Phase III was conducted September and December 2016, February/March and May 2017. The 2018 first semi-annual LTM event was conducted June 2018. The 2018 second semi-annual LTM event was conducted October 2018. The 2019 first semi-annual LTM event was conducted April 2019.
* MW-39, MW-47S and MW-56 were not sampled during Q4 2016 (Phase III) due to inclement weather.
** TCE target groundwater concentrations for vapor intrusion screening were back calculated from the EPA Region 7 action levels for TCE in air: 6 ug/m3 for an eight-hour commercial/industrial work shift per EPA instructions provided in their letter comments to BB&E dated January 26, 2017.

VISL Target Groundwater Concentrations were calculated using the EPA Vapor Intrusion Screening Level Calculator for commercial exposure, updated May 2018. VISL comparisons were not included for the Third and Fourth Saturated Units.
Only compounds that were detected in one or more samples are shown in the table.
µg/L - micrograms per liter
CAS - unique numerical identifier assigned by Chemical Abstracts Service (CAS)
DCE - Dichloroethene
J- analyte is present at an estimated concentration between the MDL and Reporting Limit (RL)
LTM - Long Term Monitoring
MDL - Method Detection Limit
MW - Monitoring Well
NA - Not Available
ND - Non-Detect
NS - Not Sampled
PZ - Piezometer
TCE- Trichloroethene
TCR - target cancer risk
THQ - target hazard quotient
VISL - vapor intrusion screening level

TABLE 5
LTM GROUNDWATER MNA RESULTS
COLLIS, Inc.
CLINTON, IA

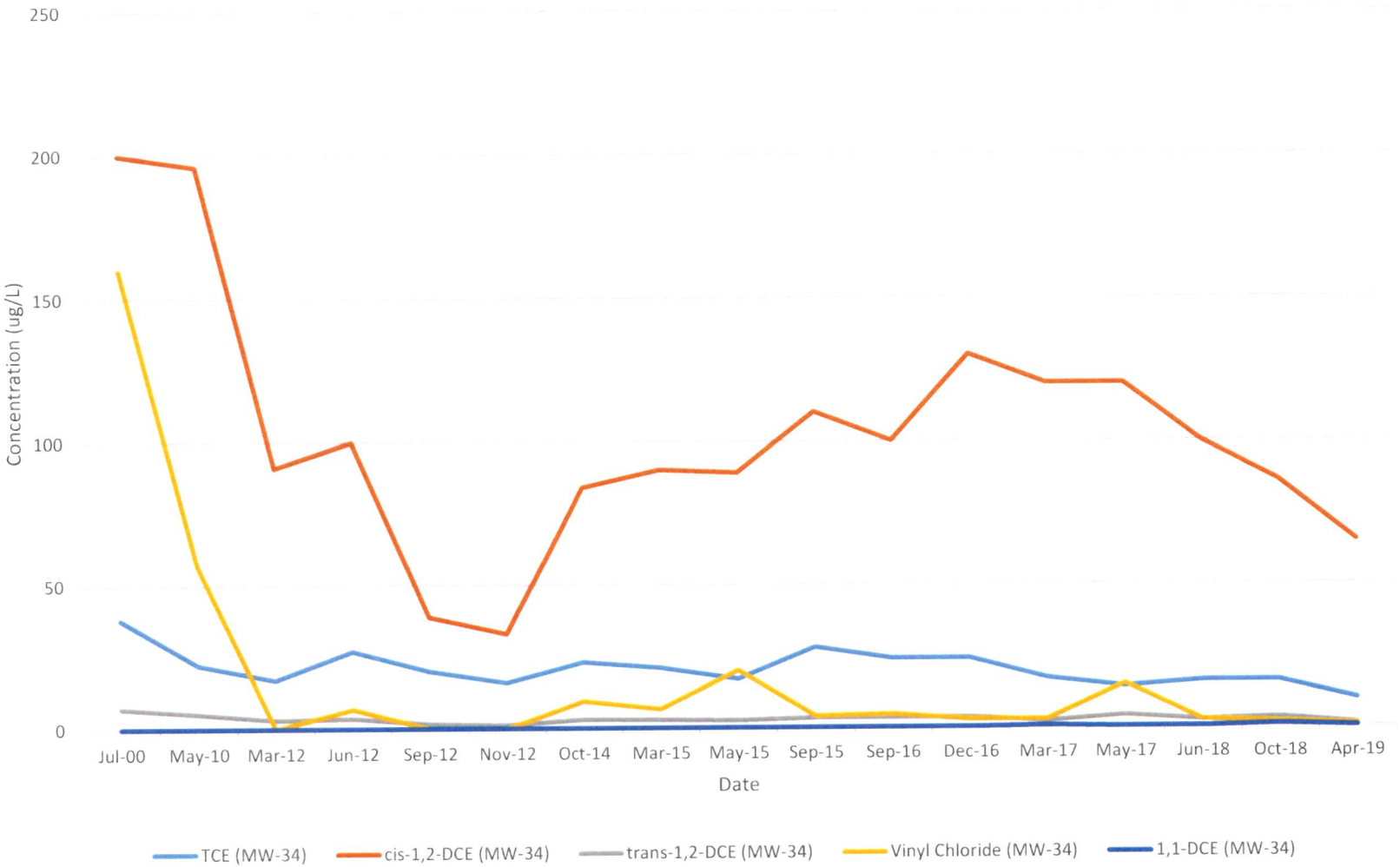
	MW-34							MW-42							MW-53						
	Phase III Quarterly LTM				Semi-annual LTM			Phase III Quarterly LTM				Semi-annual LTM			Phase III Quarterly LTM				Semi-annual LTM		
Favorable Conditions*	**Q3 2016**	**Q4 2016**	**Q1 2017**	**Q2 2017**	**SA 1 2018**	**SA 2 2018**	**SA 1 2019**	**Q3 2016**	**Q4 2016**	**Q1 2017**	**Q2 2017**	**SA 1 2018**	**SA 2 2018**	**SA 1 2019**	**Q3 2016**	**Q4 2016**	**Q1 2017**	**Q2 2017**	**SA 1 2018**	**SA 2 2018**	**SA 1 2019**
DO (<0.5 mg/L)	0.12	2.55	0.64	0.79	0.46	0.9	1.59	0.17	1.44	0.57	1.26	0.31	0.9	2.59	0.27	0.4	0.29	0.6	0.22	0.07	3.71
ORP (<50 mV good; <-100 mV better)	-46.8	228.6	-33.2	-11.9	0.7	-21.7	51.6	-18.3	-43.1	-38.8	-6.9	37.2	29.8	-10.4	-96.1	-75.5	-85.8	-40.2	-18.4	-73	-46.1
pH (5-9 S.U.)	7	7.08	7.04	7.49	7.17	7.48	6.9	6.68	7.13	7.11	7.44	7.16	7.98	7.03	7.35	7.35	7.29	7.55	7.35	8.11	7.06
Sulfate (<20,000 ug/L)	77,000	68,000	74,000	100,000	71,000	68,000	65,000	110,000	110,000	100,000	98,000	100,000	110,000	110,000	41,000	42,000	41,000	40,000	37,000	35,000	35,000
Iron (>1,000 ug/L)	51 J	18	5.9 J	55 J	33 J	19 J	ND	300	160	240	130	120	55 J	100	490	430	1,400	620	320	96	180
Nitrate/Nitrite (<1,000 ug/L)	ND	ND	33	ND	ND	ND	820	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Daughter Product: cis-1,2 DCE (ug/L)	100	130	120	120	100	86	65	360	350	360	340	250	320	280	17	6.7	7	7.6	9.5	12	12
Daughter Product: trans-1,2 DCE (ug/L)	3.5	3.6	2.1	4	2.4	3.1	1	9.5	8.8	8.2	11	9.2	11	16	ND	ND	0.36 J	ND	ND	0.67 J	0.59 J
Daughter Product: 1,1 DCE (ug/L)	ND	ND	0.45 J	ND	ND	0.67 J	ND	3.5	3.5	3	3.4	2.9	3.6	2.6	ND	ND	ND	ND	ND	ND	ND
Daughter Product: vinyl chloride (ug/L)	4.6	2.6	2.7	15	2.4	1.5	0.66 J	32	32	37	31	37	28	49	ND	ND	0.7 J	ND	0.85 J	1.2	1.2
Dissolved Gases: ethene (ug/L)	ND	ND	ND	ND	ND	2.6 J	ND	ND	ND	ND	0.72 J	5.1 J	1.9 J	ND	ND	ND	ND	ND	ND	0.71 J	ND
Dissolved Gases: ethane (ug/L)	20	11	12	20	16	17	ND	6.8	7.7	6.8	4.1	12	9.7	ND	ND	ND	ND	ND	ND	1.7 J	ND
Dissolved Gases: methane (>500 ug/L)	380	220	180	320	230	190	44	250	270	270	180	260	190	310	31	10	18	11	13	19	21

Notes:
*Reference: Wiedemeier, et al., 1998, Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater.
MNA groundwater results shown are from Phase III LTM conducted quarterly 2016-2017; the 2018 first semi-annual LTM conducted June 2018; the 2018 second semi-annual LTM conducted October 2018; and the 2019 first semi-annual LTM conducted April 2019.
1,1 DCE = 1,1 dichloroethylene
cis-1,2 DCE = cis-1,2-dichloroethylene
DO = Dissolved Oxygen
J = analyte is present at an estimated concentration between the Method Detection Limit and Reporting Limit
LTM = Long Term Monitoring
MNA = Monitored Natural Attenuation
mg/L = milligrams per liter
mV = millivolt
ND = non-detect
NS = not sampled
SA = Semi-annual
S.U. = standard units
trans-1,2 DCE = trans-1,2-dichloroethylene
ug/L = micrograms per liter
Red = does not meet favorable conditions
Green = meets favorable conditions

GRAPHS

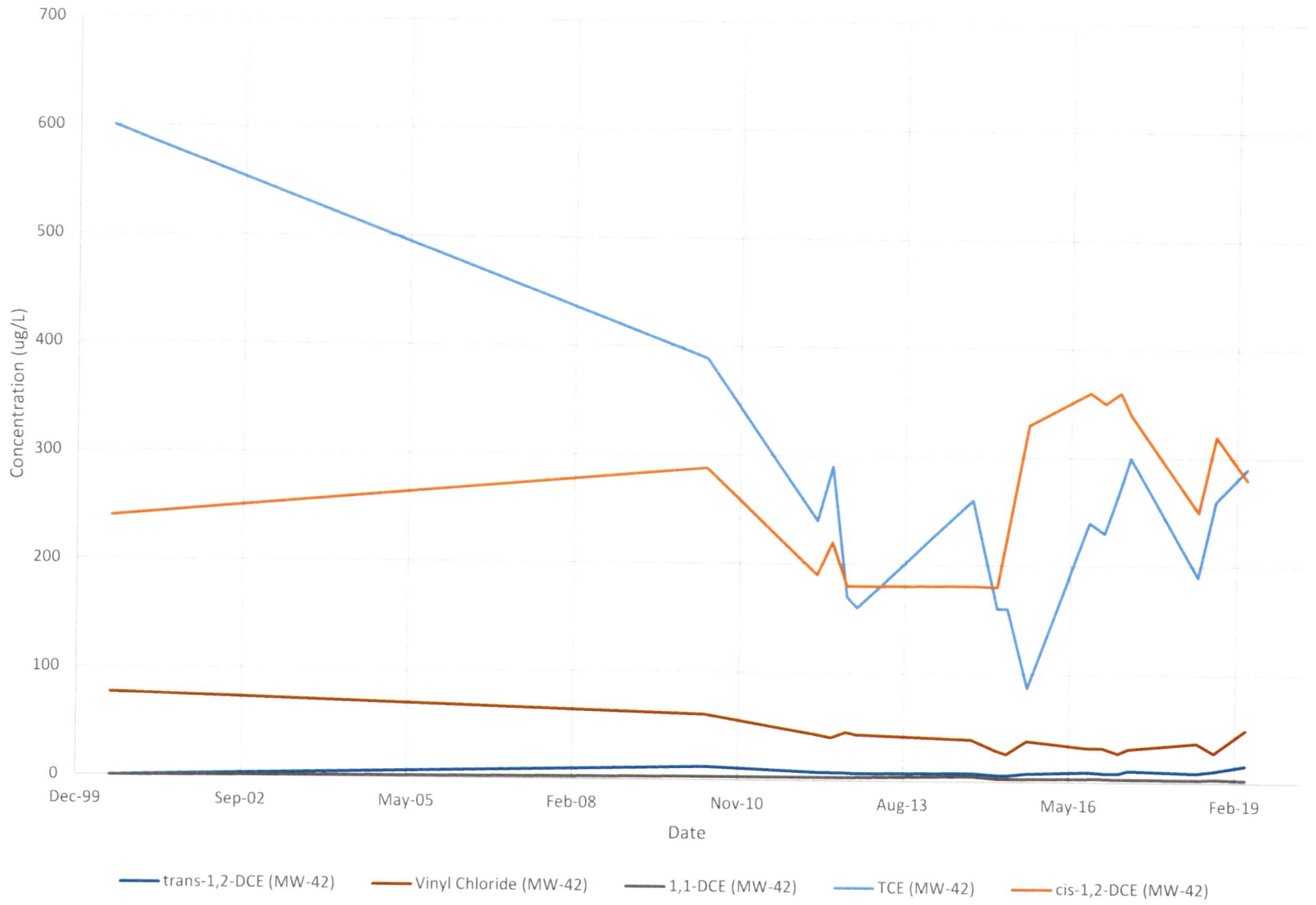
Graph 1

MW-34 Groundwater Concentration Trends



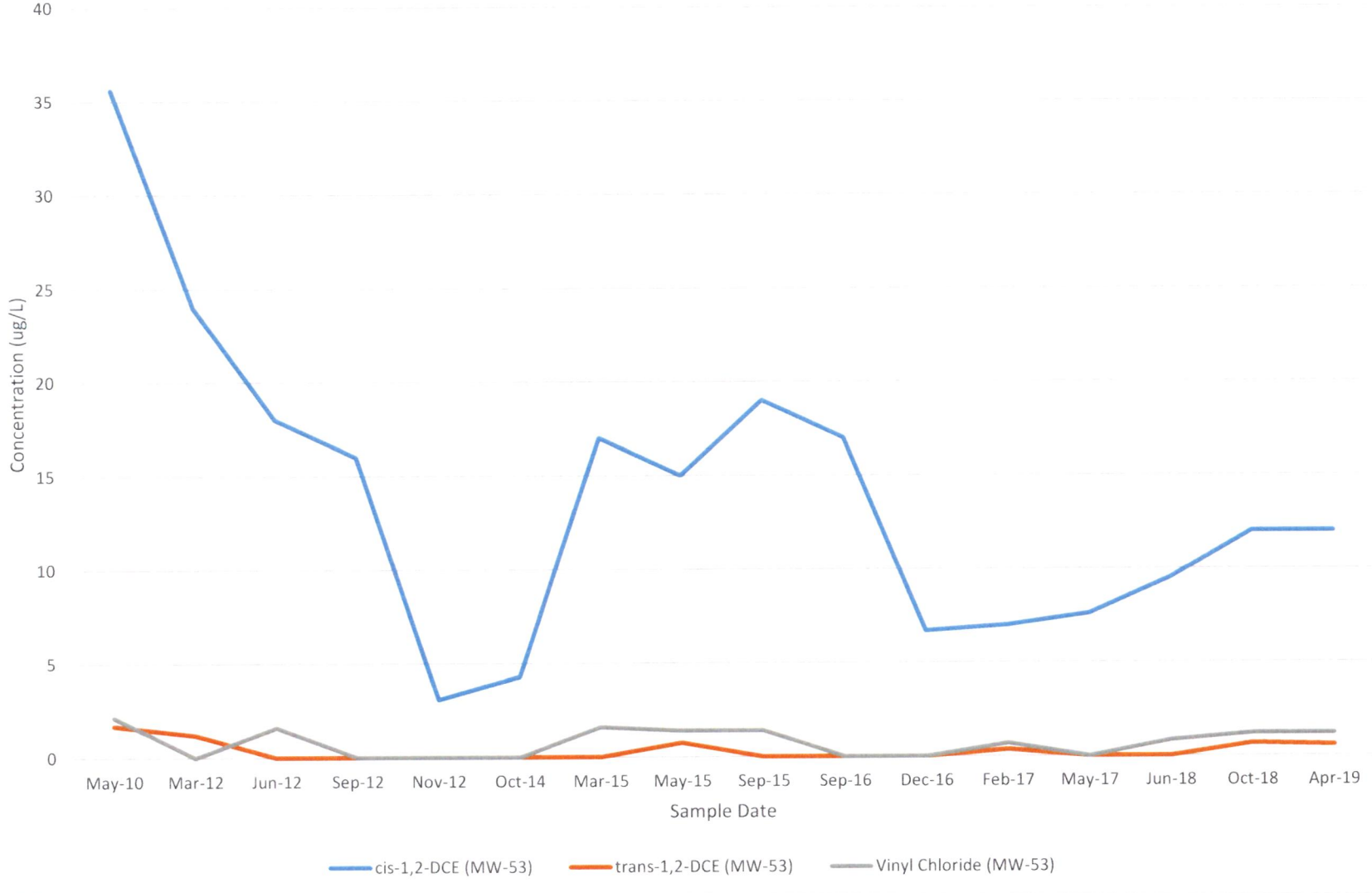
Graph 2

MW-42 Groundwater Concentration Trends



Graph 3

MW-53 Groundwater Concentration Trends



ATTACHMENT A

LABORATORY ANALYTICAL DATA

ALS Environmental

18-Apr-2019

Kacie Van Buskirk
BB&E, Inc.
235 East Main Street
Suite 107
Northville, MI 48167

Re: **SSW Collis 2019 LTM Task 1** Work Order: **1904634**

Dear Kacie,

ALS Environmental received 17 samples on 10-Apr-2019 08:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 79.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

Certificate No: IA: 403

ALS Group, USA

Date: 18-Apr-19

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Work Order: **1904634**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1904634-01	COL-GW-01	Groundwater		4/8/2019 09:35	4/10/2019 08:00	☐
1904634-02	COL-GW-02	Groundwater		4/8/2019 10:20	4/10/2019 08:00	☐
1904634-03	COL-GW-03	Groundwater		4/8/2019 11:00	4/10/2019 08:00	☐
1904634-04	COL-GW-04	Groundwater		4/8/2019 12:10	4/10/2019 08:00	☐
1904634-05	COL-GW-05	Groundwater		4/8/2019 13:00	4/10/2019 08:00	☐
1904634-06	COL-GW-06	Groundwater		4/8/2019 13:55	4/10/2019 08:00	☐
1904634-07	COL-GW-07	Groundwater		4/8/2019 13:55	4/10/2019 08:00	☐
1904634-08	COL-GW-08	Groundwater		4/8/2019 14:55	4/10/2019 08:00	☐
1904634-09	COL-GW-09	Groundwater		4/8/2019 15:40	4/10/2019 08:00	☐
1904634-10	COL-GW-10	Groundwater		4/9/2019 08:30	4/10/2019 08:00	☐
1904634-11	COL-GW-11	Groundwater		4/9/2019 09:15	4/10/2019 08:00	☐
1904634-12	COL-GW-12	Groundwater		4/9/2019 10:00	4/10/2019 08:00	☐
1904634-13	COL-GW-13	Groundwater		4/9/2019 10:00	4/10/2019 08:00	☐
1904634-14	COL-GW-14	Groundwater		4/9/2019 11:25	4/10/2019 08:00	☐
1904634-15	COL-GW-15	Groundwater		4/9/2019 12:20	4/10/2019 08:00	☐
1904634-16	EB	Water		4/9/2019 12:30	4/10/2019 08:00	☐
1904634-17	Trip Blank	Water		4/9/2019	4/10/2019 08:00	☐

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Work Order: 1904634

Case Narrative

Batch R258206, Method VOC_14DIOX_W, Sample 1904634-12A MS/MSD: The MS/MSD recovery was above the upper control limit for 1,4-Dioxane. The corresponding result in the parent sample was non-detect, therefore no qualification is required.

Batch R258206, Method VOC_14DIOX_W, Sample 1904634-13A: One or more surrogate recoveries were above the upper control limits. The sample was non-detect, therefore, no qualification is required.

Batch R258364, Method VOC_8260_W, Sample 1904634-12A MS/MSD: The MS/MSD recoveries were outside of the control limits for cis-1,2-Dichloroethene and Trichloroethene; however, the results in the parent sample are greater than 4x the spike amount. No qualification is required.

Batch R258364, Method VOC_8260_W, Sample 1904634-12A MSD: The RPD between the MS and MSD was outside the control limit for Chloroethane. The corresponding result in the parent sample should be considered estimated.

Batch R258364, Method VOC_8260_W, Sample VLCSW2-190411: The LCS recoveries were above the upper control limits for Bromomethane and Iodomethane. All the sample results in the batch were non-detect. No qualification is required.

Batch R258414, Method GASES_RSK175_W, Sample 1904634-12E MS/MSD: The MS/MSD recoveries were above the upper control limits for Ethane and Ethene. The corresponding results in the parent sample were non-detect, therefore no qualification is required.

Batch R258414, Method GASES_RSK175_W, Sample 1904634-12E MSD: The MSD recovery was outside of the control limit for Methane; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required.

ALS Group, USA

Date: 18-Apr-19

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
WorkOrder: 1904634

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-01
Collection Date: 4/8/2019 09:35 AM

Work Order: 1904634
Lab ID: 1904634-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 01:35
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 01:35
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 01:35
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 01:35
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 01:35
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 01:35
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 01:35
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 01:35
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 01:35
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 01:35
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 01:35
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 01:35
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 01:35
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 01:35
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 01:35
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 01:35
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 01:35
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 01:35
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 01:35
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 01:35
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 01:35
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 01:35
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 01:35
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 01:35
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 01:35
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 01:35
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 01:35
2-Methylnaphthalene	**0.40**	J	**0.28**	**5.0**	**µg/L**	1	4/12/2019 01:35
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 01:35
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 01:35
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 01:35
Acetone	**1.5**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 01:35
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 01:35
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 01:35
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 01:35
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 01:35
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 01:35
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 01:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-01
Collection Date: 4/8/2019 09:35 AM

Work Order: 1904634
Lab ID: 1904634-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 01:35
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 01:35
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 01:35
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 01:35
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 01:35
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 01:35
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 01:35
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 01:35
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 01:35
cis-1,2-Dichloroethene	U		0.38	1.0	µg/L	1	4/12/2019 01:35
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 01:35
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 01:35
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 01:35
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 01:35
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 01:35
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 01:35
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 01:35
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 01:35
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 01:35
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 01:35
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 01:35
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 01:35
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 01:35
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 01:35
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 01:35
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 01:35
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 01:35
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 01:35
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 01:35
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 01:35
tert-Butyl alcohol	**2.3**	J	**2.2**	**20**	**µg/L**	1	4/12/2019 01:35
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 01:35
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 01:35
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 01:35
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 01:35
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 01:35
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 01:35
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 01:35
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 01:35
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 01:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-01
Collection Date: 4/8/2019 09:35 AM

Work Order: 1904634
Lab ID: 1904634-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 01:35
Vinyl chloride	U		0.53	1.0	µg/L	1	4/12/2019 01:35
Surr: 1,2-Dichloroethane-d4	*98.5*			*75-120*	*%REC*	1	4/12/2019 01:35
Surr: 4-Bromofluorobenzene	*97.8*			*80-110*	*%REC*	1	4/12/2019 01:35
Surr: Dibromofluoromethane	*97.0*			*85-115*	*%REC*	1	4/12/2019 01:35
Surr: Toluene-d8	*101*			*85-110*	*%REC*	1	4/12/2019 01:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-02
Collection Date: 4/8/2019 10:20 AM

Work Order: 1904634
Lab ID: 1904634-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 01:51
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 01:51
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 01:51
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 01:51
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 01:51
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 01:51
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 01:51
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 01:51
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 01:51
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 01:51
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 01:51
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 01:51
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 01:51
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 01:51
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 01:51
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 01:51
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 01:51
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 01:51
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 01:51
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 01:51
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 01:51
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 01:51
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 01:51
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 01:51
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 01:51
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 01:51
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 01:51
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 01:51
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 01:51
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 01:51
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 01:51
Acetone	**3.2**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 01:51
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 01:51
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 01:51
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 01:51
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 01:51
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 01:51
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 01:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-02
Collection Date: 4/8/2019 10:20 AM

Work Order: 1904634
Lab ID: 1904634-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 01:51
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 01:51
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 01:51
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 01:51
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 01:51
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 01:51
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 01:51
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 01:51
Chloromethane	**2.1**		**0.68**	**1.0**	**µg/L**	1	4/12/2019 01:51
cis-1,2-Dichloroethene	U		0.38	1.0	µg/L	1	4/12/2019 01:51
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 01:51
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 01:51
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 01:51
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 01:51
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 01:51
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 01:51
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 01:51
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 01:51
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 01:51
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 01:51
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 01:51
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 01:51
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 01:51
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 01:51
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 01:51
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 01:51
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 01:51
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 01:51
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 01:51
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 01:51
tert-Butyl alcohol	**5.4**	J	**2.2**	**20**	**µg/L**	1	4/12/2019 01:51
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 01:51
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 01:51
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 01:51
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 01:51
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 01:51
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 01:51
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 01:51
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 01:51
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 01:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-02
Collection Date: 4/8/2019 10:20 AM

Work Order: 1904634
Lab ID: 1904634-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 01:51
Vinyl chloride	U		0.53	1.0	µg/L	1	4/12/2019 01:51
Surr: 1,2-Dichloroethane-d4	*96.9*			*75-120*	*%REC*	1	4/12/2019 01:51
Surr: 4-Bromofluorobenzene	*99.3*			*80-110*	*%REC*	1	4/12/2019 01:51
Surr: Dibromofluoromethane	*95.6*			*85-115*	*%REC*	1	4/12/2019 01:51
Surr: Toluene-d8	*99.4*			*85-110*	*%REC*	1	4/12/2019 01:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-03
Collection Date: 4/8/2019 11:00 AM

Work Order: 1904634
Lab ID: 1904634-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 02:08
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 02:08
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 02:08
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 02:08
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 02:08
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 02:08
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 02:08
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 02:08
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 02:08
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 02:08
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 02:08
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 02:08
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 02:08
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 02:08
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 02:08
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 02:08
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 02:08
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 02:08
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 02:08
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:08
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 02:08
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:08
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 02:08
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 02:08
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 02:08
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 02:08
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 02:08
2-Methylnaphthalene	**0.37**	J	**0.28**	**5.0**	**µg/L**	1	4/12/2019 02:08
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 02:08
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 02:08
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 02:08
Acetone	**2.9**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 02:08
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 02:08
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 02:08
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 02:08
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 02:08
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:08
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 02:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-03
Collection Date: 4/8/2019 11:00 AM

Work Order: 1904634
Lab ID: 1904634-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 02:08
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 02:08
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 02:08
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 02:08
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 02:08
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 02:08
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 02:08
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 02:08
Chloromethane	**2.0**		**0.68**	**1.0**	**µg/L**	1	4/12/2019 02:08
cis-1,2-Dichloroethene	U		0.38	1.0	µg/L	1	4/12/2019 02:08
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 02:08
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 02:08
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 02:08
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 02:08
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 02:08
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 02:08
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 02:08
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 02:08
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 02:08
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 02:08
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 02:08
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 02:08
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 02:08
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 02:08
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 02:08
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 02:08
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 02:08
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 02:08
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 02:08
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 02:08
tert-Butyl alcohol	**4.5**	J	**2.2**	**20**	**µg/L**	1	4/12/2019 02:08
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 02:08
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 02:08
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 02:08
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 02:08
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 02:08
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 02:08
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 02:08
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 02:08
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 02:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-03
Collection Date: 4/8/2019 11:00 AM

Work Order: 1904634
Lab ID: 1904634-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 02:08
Vinyl chloride	U		0.53	1.0	µg/L	1	4/12/2019 02:08
Surr: 1,2-Dichloroethane-d4	*99.4*			*75-120*	*%REC*	1	4/12/2019 02:08
Surr: 4-Bromofluorobenzene	*98.9*			*80-110*	*%REC*	1	4/12/2019 02:08
Surr: Dibromofluoromethane	*96.6*			*85-115*	*%REC*	1	4/12/2019 02:08
Surr: Toluene-d8	*99.6*			*85-110*	*%REC*	1	4/12/2019 02:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-04
Collection Date: 4/8/2019 12:10 PM

Work Order: 1904634
Lab ID: 1904634-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,4-DIOXANE BY SELECT ION MONITORING		Method: **SW8260B**					Analyst: **PM**
1,4-Dioxane	U		0.44	0.60	µg/L	1	4/10/2019 15:22
Surr: Toluene-d8	*105*			*74-124*	*%REC*	1	4/10/2019 15:22
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 02:24
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 02:24
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 02:24
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 02:24
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 02:24
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 02:24
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 02:24
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 02:24
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 02:24
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 02:24
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 02:24
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 02:24
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 02:24
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 02:24
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 02:24
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 02:24
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 02:24
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 02:24
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 02:24
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:24
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 02:24
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:24
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 02:24
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 02:24
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 02:24
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 02:24
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 02:24
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 02:24
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 02:24
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 02:24
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 02:24
Acetone	**1.2**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 02:24
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 02:24
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 02:24
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 02:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-04
Collection Date: 4/8/2019 12:10 PM

Work Order: 1904634
Lab ID: 1904634-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 02:24
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:24
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 02:24
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 02:24
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 02:24
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 02:24
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 02:24
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 02:24
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 02:24
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 02:24
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 02:24
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 02:24
cis-1,2-Dichloroethene	**87**		**0.38**	**1.0**	**µg/L**	1	4/12/2019 02:24
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 02:24
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 02:24
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 02:24
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 02:24
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 02:24
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 02:24
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 02:24
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 02:24
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 02:24
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 02:24
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 02:24
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 02:24
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 02:24
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 02:24
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 02:24
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 02:24
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 02:24
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 02:24
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 02:24
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 02:24
tert-Butyl alcohol	**3.6**	J	**2.2**	**20**	**µg/L**	1	4/12/2019 02:24
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 02:24
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 02:24
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 02:24
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 02:24
trans-1,2-Dichloroethene	**2.5**		**0.48**	**1.0**	**µg/L**	1	4/12/2019 02:24
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 02:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-04
Collection Date: 4/8/2019 12:10 PM

Work Order: 1904634
Lab ID: 1904634-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 02:24
Trichloroethene	**4.0**		**0.33**	**1.0**	**µg/L**	1	4/12/2019 02:24
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 02:24
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 02:24
Vinyl chloride	**4.2**		**0.53**	**1.0**	**µg/L**	1	4/12/2019 02:24
Surr: 1,2-Dichloroethane-d4	*98.5*			*75-120*	*%REC*	1	4/12/2019 02:24
Surr: 4-Bromofluorobenzene	*96.6*			*80-110*	*%REC*	1	4/12/2019 02:24
Surr: Dibromofluoromethane	*97.2*			*85-115*	*%REC*	1	4/12/2019 02:24
Surr: Toluene-d8	*99.3*			*85-110*	*%REC*	1	4/12/2019 02:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-05
Collection Date: 4/8/2019 01:00 PM

Work Order: 1904634
Lab ID: 1904634-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
GASES IN WATER		Method: **RSK-175**					Analyst: **KB**
Ethane	U		0.21	5.0	µg/L	1	4/12/2019 15:03
Ethene	U		0.41	5.0	µg/L	1	4/12/2019 15:03
Methane	**21**		**0.64**	**5.0**	**µg/L**	1	4/12/2019 15:03
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 4/16/19		Analyst: **STP**
Iron	**0.18**		**0.015**	**0.080**	**mg/L**	1	4/16/2019 16:11
Manganese	**0.045**		**0.00026**	**0.0050**	**mg/L**	1	4/16/2019 16:11
1,4-DIOXANE BY SELECT ION MONITORING		Method: **SW8260B**					Analyst: **PM**
1,4-Dioxane	U		0.44	0.60	µg/L	1	4/10/2019 15:37
Surr: Toluene-d8	*97.3*			*74-124*	*%REC*	1	4/10/2019 15:37
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 02:41
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 02:41
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 02:41
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 02:41
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 02:41
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 02:41
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 02:41
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 02:41
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 02:41
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 02:41
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 02:41
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 02:41
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 02:41
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 02:41
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 02:41
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 02:41
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 02:41
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 02:41
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 02:41
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:41
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 02:41
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:41
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 02:41
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 02:41
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 02:41
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 02:41
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 02:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-05
Collection Date: 4/8/2019 01:00 PM

Work Order: 1904634
Lab ID: 1904634-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 02:41
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 02:41
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 02:41
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 02:41
Acetone	**1.7**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 02:41
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 02:41
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 02:41
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 02:41
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 02:41
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:41
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 02:41
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 02:41
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 02:41
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 02:41
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 02:41
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 02:41
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 02:41
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 02:41
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 02:41
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 02:41
cis-1,2-Dichloroethene	**12**		**0.38**	**1.0**	**µg/L**	1	4/12/2019 02:41
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 02:41
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 02:41
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 02:41
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 02:41
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 02:41
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 02:41
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 02:41
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 02:41
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 02:41
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 02:41
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 02:41
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 02:41
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 02:41
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 02:41
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 02:41
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 02:41
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 02:41
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 02:41
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 02:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-05
Collection Date: 4/8/2019 01:00 PM

Work Order: 1904634
Lab ID: 1904634-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 02:41
tert-Butyl alcohol	**3.0**	J	**2.2**	**20**	**µg/L**	1	4/12/2019 02:41
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 02:41
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 02:41
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 02:41
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 02:41
trans-1,2-Dichloroethene	**0.59**	J	**0.48**	**1.0**	**µg/L**	1	4/12/2019 02:41
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 02:41
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 02:41
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 02:41
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 02:41
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 02:41
Vinyl chloride	**1.2**		**0.53**	**1.0**	**µg/L**	1	4/12/2019 02:41
Surr: 1,2-Dichloroethane-d4	*95.6*			*75-120*	*%REC*	1	4/12/2019 02:41
Surr: 4-Bromofluorobenzene	*99.0*			*80-110*	*%REC*	1	4/12/2019 02:41
Surr: Dibromofluoromethane	*96.3*			*85-115*	*%REC*	1	4/12/2019 02:41
Surr: Toluene-d8	*98.4*			*85-110*	*%REC*	1	4/12/2019 02:41
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **JDR**
Chloride	**23**		**3.1**	**10**	**mg/L**	10	4/15/2019 13:23
Sulfate	**35**		**3.4**	**10**	**mg/L**	10	4/15/2019 13:23
NITROGEN, NITRATE-NITRITE			Method: **E353.2 R2.0**				Analyst: **JZB**
Nitrogen, Nitrate-Nitrite	U		0.012	0.020	mg/L	1	4/12/2019 12:51
SULFIDE			Method: **SW9034**				Analyst: **RZM**
Sulfide	U		0.42	1.0	mg/L	1	4/15/2019 14:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-06
Collection Date: 4/8/2019 01:55 PM

Work Order: 1904634
Lab ID: 1904634-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 02:58
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 02:58
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 02:58
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 02:58
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 02:58
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 02:58
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 02:58
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 02:58
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 02:58
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 02:58
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 02:58
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 02:58
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 02:58
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 02:58
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 02:58
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 02:58
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 02:58
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 02:58
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 02:58
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:58
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 02:58
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:58
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 02:58
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 02:58
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 02:58
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 02:58
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 02:58
2-Methylnaphthalene	**0.37**	J	**0.28**	**5.0**	**µg/L**	1	4/12/2019 02:58
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 02:58
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 02:58
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 02:58
Acetone	**2.0**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 02:58
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 02:58
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 02:58
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 02:58
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 02:58
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 02:58
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 02:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-06
Collection Date: 4/8/2019 01:55 PM

Work Order: 1904634
Lab ID: 1904634-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 02:58
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 02:58
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 02:58
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 02:58
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 02:58
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 02:58
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 02:58
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 02:58
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 02:58
cis-1,2-Dichloroethene	U		0.38	1.0	µg/L	1	4/12/2019 02:58
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 02:58
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 02:58
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 02:58
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 02:58
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 02:58
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 02:58
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 02:58
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 02:58
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 02:58
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 02:58
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 02:58
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 02:58
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 02:58
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 02:58
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 02:58
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 02:58
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 02:58
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 02:58
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 02:58
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 02:58
tert-Butyl alcohol	U		2.2	20	µg/L	1	4/12/2019 02:58
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 02:58
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 02:58
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 02:58
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 02:58
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 02:58
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 02:58
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 02:58
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 02:58
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 02:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-06
Collection Date: 4/8/2019 01:55 PM

Work Order: 1904634
Lab ID: 1904634-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 02:58
Vinyl chloride	U		0.53	1.0	µg/L	1	4/12/2019 02:58
Surr: 1,2-Dichloroethane-d4	*98.4*			*75-120*	*%REC*	1	4/12/2019 02:58
Surr: 4-Bromofluorobenzene	*97.4*			*80-110*	*%REC*	1	4/12/2019 02:58
Surr: Dibromofluoromethane	*95.6*			*85-115*	*%REC*	1	4/12/2019 02:58
Surr: Toluene-d8	*99.6*			*85-110*	*%REC*	1	4/12/2019 02:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-07
Collection Date: 4/8/2019 01:55 PM

Work Order: 1904634
Lab ID: 1904634-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 03:14
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 03:14
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 03:14
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 03:14
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 03:14
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 03:14
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 03:14
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 03:14
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 03:14
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 03:14
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 03:14
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 03:14
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 03:14
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 03:14
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 03:14
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 03:14
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 03:14
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 03:14
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 03:14
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 03:14
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 03:14
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 03:14
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 03:14
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 03:14
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 03:14
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 03:14
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 03:14
2-Methylnaphthalene	**0.37**	J	**0.28**	**5.0**	**µg/L**	1	4/12/2019 03:14
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 03:14
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 03:14
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 03:14
Acetone	**2.8**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 03:14
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 03:14
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 03:14
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 03:14
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 03:14
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 03:14
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 03:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-07
Collection Date: 4/8/2019 01:55 PM

Work Order: 1904634
Lab ID: 1904634-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 03:14
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 03:14
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 03:14
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 03:14
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 03:14
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 03:14
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 03:14
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 03:14
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 03:14
cis-1,2-Dichloroethene	U		0.38	1.0	µg/L	1	4/12/2019 03:14
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 03:14
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 03:14
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 03:14
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 03:14
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 03:14
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 03:14
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 03:14
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 03:14
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 03:14
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 03:14
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 03:14
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 03:14
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 03:14
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 03:14
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 03:14
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 03:14
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 03:14
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 03:14
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 03:14
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 03:14
tert-Butyl alcohol	U		2.2	20	µg/L	1	4/12/2019 03:14
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 03:14
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 03:14
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 03:14
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 03:14
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 03:14
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 03:14
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 03:14
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 03:14
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 03:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-07
Collection Date: 4/8/2019 01:55 PM

Work Order: 1904634
Lab ID: 1904634-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 03:14
Vinyl chloride	U		0.53	1.0	µg/L	1	4/12/2019 03:14
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	4/12/2019 03:14
Surr: 4-Bromofluorobenzene	*99.4*			*80-110*	*%REC*	1	4/12/2019 03:14
Surr: Dibromofluoromethane	*95.8*			*85-115*	*%REC*	1	4/12/2019 03:14
Surr: Toluene-d8	*99.0*			*85-110*	*%REC*	1	4/12/2019 03:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-08
Collection Date: 4/8/2019 02:55 PM

Work Order: 1904634
Lab ID: 1904634-08
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 03:31
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 03:31
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 03:31
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 03:31
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 03:31
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 03:31
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 03:31
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 03:31
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 03:31
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 03:31
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 03:31
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 03:31
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 03:31
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 03:31
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 03:31
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 03:31
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 03:31
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 03:31
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 03:31
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 03:31
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 03:31
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 03:31
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 03:31
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 03:31
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 03:31
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 03:31
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 03:31
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 03:31
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 03:31
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 03:31
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 03:31
Acetone	**1.5**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 03:31
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 03:31
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 03:31
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 03:31
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 03:31
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 03:31
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 03:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-08
Collection Date: 4/8/2019 02:55 PM

Work Order: 1904634
Lab ID: 1904634-08
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 03:31
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 03:31
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 03:31
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 03:31
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 03:31
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 03:31
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 03:31
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 03:31
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 03:31
cis-1,2-Dichloroethene	**2.3**		**0.38**	**1.0**	**µg/L**	1	4/12/2019 03:31
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 03:31
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 03:31
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 03:31
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 03:31
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 03:31
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 03:31
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 03:31
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 03:31
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 03:31
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 03:31
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 03:31
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 03:31
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 03:31
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 03:31
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 03:31
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 03:31
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 03:31
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 03:31
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 03:31
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 03:31
tert-Butyl alcohol	U		2.2	20	µg/L	1	4/12/2019 03:31
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 03:31
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 03:31
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 03:31
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 03:31
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 03:31
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 03:31
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 03:31
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 03:31
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 03:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-08
Collection Date: 4/8/2019 02:55 PM

Work Order: 1904634
Lab ID: 1904634-08
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 03:31
Vinyl chloride	U		0.53	1.0	µg/L	1	4/12/2019 03:31
Surr: 1,2-Dichloroethane-d4	*98.8*			*75-120*	*%REC*	1	4/12/2019 03:31
Surr: 4-Bromofluorobenzene	*100*			*80-110*	*%REC*	1	4/12/2019 03:31
Surr: Dibromofluoromethane	*98.4*			*85-115*	*%REC*	1	4/12/2019 03:31
Surr: Toluene-d8	*98.6*			*85-110*	*%REC*	1	4/12/2019 03:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-09
Collection Date: 4/8/2019 03:40 PM

Work Order: 1904634
Lab ID: 1904634-09
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 03:48
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 03:48
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 03:48
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 03:48
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 03:48
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 03:48
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 03:48
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 03:48
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 03:48
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 03:48
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 03:48
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 03:48
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 03:48
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 03:48
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 03:48
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 03:48
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 03:48
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 03:48
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 03:48
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 03:48
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 03:48
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 03:48
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 03:48
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 03:48
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 03:48
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 03:48
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 03:48
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 03:48
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 03:48
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 03:48
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 03:48
Acetone	**5.1**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 03:48
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 03:48
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 03:48
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 03:48
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 03:48
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 03:48
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 03:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-09
Collection Date: 4/8/2019 03:40 PM

Work Order: 1904634
Lab ID: 1904634-09
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 03:48
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 03:48
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 03:48
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 03:48
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 03:48
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 03:48
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 03:48
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 03:48
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 03:48
cis-1,2-Dichloroethene	**100**		**0.76**	**2.0**	**µg/L**	2	4/13/2019 12:42
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 03:48
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 03:48
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 03:48
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 03:48
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 03:48
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 03:48
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 03:48
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 03:48
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 03:48
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 03:48
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 03:48
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 03:48
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 03:48
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 03:48
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 03:48
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 03:48
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 03:48
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 03:48
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 03:48
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 03:48
tert-Butyl alcohol	**3.8**	J	**2.2**	**20**	**µg/L**	1	4/12/2019 03:48
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 03:48
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 03:48
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 03:48
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 03:48
trans-1,2-Dichloroethene	**3.2**		**0.48**	**1.0**	**µg/L**	1	4/12/2019 03:48
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 03:48
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 03:48
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 03:48
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 03:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-09
Collection Date: 4/8/2019 03:40 PM

Work Order: 1904634
Lab ID: 1904634-09
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 03:48
Vinyl chloride	**55**		**0.53**	**1.0**	**µg/L**	1	4/12/2019 03:48
Surr: 1,2-Dichloroethane-d4	*99.4*			*75-120*	*%REC*	1	4/12/2019 03:48
Surr: 1,2-Dichloroethane-d4	*84.6*			*75-120*	*%REC*	2	4/13/2019 12:42
Surr: 4-Bromofluorobenzene	*101*			*80-110*	*%REC*	1	4/12/2019 03:48
Surr: 4-Bromofluorobenzene	*99.1*			*80-110*	*%REC*	2	4/13/2019 12:42
Surr: Dibromofluoromethane	*98.0*			*85-115*	*%REC*	1	4/12/2019 03:48
Surr: Dibromofluoromethane	*94.9*			*85-115*	*%REC*	2	4/13/2019 12:42
Surr: Toluene-d8	*101*			*85-110*	*%REC*	1	4/12/2019 03:48
Surr: Toluene-d8	*95.2*			*85-110*	*%REC*	2	4/13/2019 12:42

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-10
Collection Date: 4/9/2019 08:30 AM

Work Order: 1904634
Lab ID: 1904634-10
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 04:04
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 04:04
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 04:04
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 04:04
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 04:04
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 04:04
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 04:04
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 04:04
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 04:04
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 04:04
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 04:04
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 04:04
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 04:04
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 04:04
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 04:04
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 04:04
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 04:04
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 04:04
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 04:04
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:04
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 04:04
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:04
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 04:04
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 04:04
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 04:04
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 04:04
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 04:04
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 04:04
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 04:04
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 04:04
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 04:04
Acetone	**1.9**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 04:04
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 04:04
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 04:04
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 04:04
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 04:04
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:04
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 04:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-10
Collection Date: 4/9/2019 08:30 AM

Work Order: 1904634
Lab ID: 1904634-10
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 04:04
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 04:04
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 04:04
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 04:04
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 04:04
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 04:04
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 04:04
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 04:04
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 04:04
cis-1,2-Dichloroethene	**31**		**0.38**	**1.0**	**µg/L**	1	4/12/2019 04:04
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 04:04
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 04:04
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 04:04
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 04:04
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 04:04
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 04:04
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 04:04
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 04:04
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 04:04
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 04:04
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 04:04
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 04:04
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 04:04
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 04:04
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 04:04
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 04:04
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 04:04
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 04:04
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 04:04
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 04:04
tert-Butyl alcohol	**3.6**	J	**2.2**	**20**	**µg/L**	1	4/12/2019 04:04
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 04:04
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 04:04
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 04:04
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 04:04
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 04:04
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 04:04
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 04:04
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 04:04
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 04:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-10
Collection Date: 4/9/2019 08:30 AM

Work Order: 1904634
Lab ID: 1904634-10
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 04:04
Vinyl chloride	**40**		**0.53**	**1.0**	**µg/L**	1	4/12/2019 04:04
Surr: 1,2-Dichloroethane-d4	*99.0*			*75-120*	*%REC*	1	4/12/2019 04:04
Surr: 4-Bromofluorobenzene	*101*			*80-110*	*%REC*	1	4/12/2019 04:04
Surr: Dibromofluoromethane	*97.4*			*85-115*	*%REC*	1	4/12/2019 04:04
Surr: Toluene-d8	*100*			*85-110*	*%REC*	1	4/12/2019 04:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-11
Collection Date: 4/9/2019 09:15 AM

Work Order: 1904634
Lab ID: 1904634-11
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 04:21
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 04:21
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 04:21
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 04:21
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 04:21
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 04:21
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 04:21
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 04:21
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 04:21
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 04:21
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 04:21
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 04:21
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 04:21
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 04:21
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 04:21
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 04:21
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 04:21
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 04:21
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 04:21
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:21
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 04:21
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:21
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 04:21
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 04:21
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 04:21
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 04:21
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 04:21
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 04:21
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 04:21
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 04:21
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 04:21
Acetone	U		0.47	10	µg/L	1	4/12/2019 04:21
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 04:21
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 04:21
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 04:21
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 04:21
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:21
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 04:21

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-11
Collection Date: 4/9/2019 09:15 AM

Work Order: 1904634
Lab ID: 1904634-11
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 04:21
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 04:21
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 04:21
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 04:21
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 04:21
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 04:21
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 04:21
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 04:21
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 04:21
cis-1,2-Dichloroethene	**7.7**		**0.38**	**1.0**	**µg/L**	1	4/12/2019 04:21
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 04:21
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 04:21
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 04:21
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 04:21
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 04:21
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 04:21
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 04:21
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 04:21
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 04:21
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 04:21
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 04:21
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 04:21
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 04:21
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 04:21
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 04:21
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 04:21
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 04:21
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 04:21
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 04:21
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 04:21
tert-Butyl alcohol	U		2.2	20	µg/L	1	4/12/2019 04:21
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 04:21
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 04:21
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 04:21
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 04:21
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 04:21
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 04:21
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 04:21
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 04:21
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 04:21

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-11
Collection Date: 4/9/2019 09:15 AM

Work Order: 1904634
Lab ID: 1904634-11
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 04:21
Vinyl chloride	**37**		**0.53**	**1.0**	**µg/L**	1	4/12/2019 04:21
Surr: 1,2-Dichloroethane-d4	*98.4*			*75-120*	*%REC*	1	4/12/2019 04:21
Surr: 4-Bromofluorobenzene	*99.3*			*80-110*	*%REC*	1	4/12/2019 04:21
Surr: Dibromofluoromethane	*96.6*			*85-115*	*%REC*	1	4/12/2019 04:21
Surr: Toluene-d8	*99.0*			*85-110*	*%REC*	1	4/12/2019 04:21

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-12
Collection Date: 4/9/2019 10:00 AM

Work Order: 1904634
Lab ID: 1904634-12
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
GASES IN WATER			Method: **RSK-175**				Analyst: **KB**
Ethane	U		0.21	5.0	µg/L	1	4/12/2019 15:06
Ethene	U		0.41	5.0	µg/L	1	4/12/2019 15:06
Methane	**310**		**3.2**	**25**	**µg/L**	5	4/12/2019 15:51
METALS BY ICP-MS (DISSOLVED)			Method: **SW6020A**		Prep: FILTER / 4/16/19		Analyst: **STP**
Iron	**0.10**		**0.015**	**0.080**	**mg/L**	1	4/16/2019 16:16
Manganese	**0.29**		**0.00026**	**0.0050**	**mg/L**	1	4/16/2019 16:16
1,4-DIOXANE BY SELECT ION MONITORING			Method: **SW8260B**				Analyst: **PM**
1,4-Dioxane	U		0.44	0.60	µg/L	1	4/10/2019 15:52
Surr: Toluene-d8	*108*			*74-124*	*%REC*	1	4/10/2019 15:52
VOLATILE ORGANIC COMPOUNDS			Method: **SW8260C**				Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 04:37
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 04:37
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 04:37
1,1,2-Trichloroethane	**0.60**	J	**0.22**	**1.0**	**µg/L**	1	4/12/2019 04:37
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 04:37
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 04:37
1,1-Dichloroethene	**2.6**		**0.36**	**1.0**	**µg/L**	1	4/12/2019 04:37
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 04:37
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 04:37
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 04:37
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 04:37
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 04:37
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 04:37
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 04:37
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 04:37
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 04:37
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 04:37
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 04:37
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 04:37
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:37
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 04:37
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:37
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 04:37
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 04:37
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 04:37
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 04:37
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 04:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-12
Collection Date: 4/9/2019 10:00 AM

Work Order: 1904634
Lab ID: 1904634-12
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 04:37
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 04:37
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 04:37
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 04:37
Acetone	**9.4**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 04:37
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 04:37
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 04:37
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 04:37
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 04:37
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:37
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 04:37
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 04:37
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 04:37
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 04:37
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 04:37
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 04:37
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 04:37
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 04:37
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 04:37
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 04:37
cis-1,2-Dichloroethene	**280**		**1.9**	**5.0**	**µg/L**	5	4/13/2019 01:04
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 04:37
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 04:37
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 04:37
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 04:37
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 04:37
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 04:37
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 04:37
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 04:37
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 04:37
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 04:37
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 04:37
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 04:37
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 04:37
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 04:37
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 04:37
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 04:37
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 04:37
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 04:37
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 04:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-12
Collection Date: 4/9/2019 10:00 AM

Work Order: 1904634
Lab ID: 1904634-12
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 04:37
tert-Butyl alcohol	U		2.2	20	µg/L	1	4/12/2019 04:37
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 04:37
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 04:37
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 04:37
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 04:37
trans-1,2-Dichloroethene	**16**		**0.48**	**1.0**	**µg/L**	1	4/12/2019 04:37
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 04:37
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 04:37
Trichloroethene	**250**		**1.6**	**5.0**	**µg/L**	5	4/13/2019 01:04
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 04:37
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 04:37
Vinyl chloride	**47**		**0.53**	**1.0**	**µg/L**	1	4/12/2019 04:37
Surr: 1,2-Dichloroethane-d4	*99.6*			*75-120*	*%REC*	1	4/12/2019 04:37
Surr: 1,2-Dichloroethane-d4	*88.4*			*75-120*	*%REC*	5	4/13/2019 01:04
Surr: 4-Bromofluorobenzene	*99.6*			*80-110*	*%REC*	1	4/12/2019 04:37
Surr: 4-Bromofluorobenzene	*100*			*80-110*	*%REC*	5	4/13/2019 01:04
Surr: Dibromofluoromethane	*97.2*			*85-115*	*%REC*	1	4/12/2019 04:37
Surr: Dibromofluoromethane	*95.6*			*85-115*	*%REC*	5	4/13/2019 01:04
Surr: Toluene-d8	*99.0*			*85-110*	*%REC*	1	4/12/2019 04:37
Surr: Toluene-d8	*94.3*			*85-110*	*%REC*	5	4/13/2019 01:04
ANIONS BY ION CHROMATOGRAPHY		Method: **SW9056A**					Analyst: **JDR**
Chloride	**68**		**6.2**	**20**	**mg/L**	20	4/15/2019 13:55
Sulfate	**100**		**6.9**	**20**	**mg/L**	20	4/15/2019 13:55
NITROGEN, NITRATE-NITRITE		Method: **E353.2 R2.0**					Analyst: **JZB**
Nitrogen, Nitrate-Nitrite	U		0.012	0.020	mg/L	1	4/12/2019 12:52
SULFIDE		Method: **SW9034**					Analyst: **RZM**
Sulfide	U		0.42	1.0	mg/L	1	4/16/2019 14:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-13
Collection Date: 4/9/2019 10:00 AM

Work Order: 1904634
Lab ID: 1904634-13
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
GASES IN WATER		Method: **RSK-175**					Analyst: **KB**
Ethane	U		0.21	5.0	µg/L	1	4/12/2019 15:08
Ethene	U		0.41	5.0	µg/L	1	4/12/2019 15:08
Methane	**280**		**3.2**	**25**	**µg/L**	5	4/12/2019 15:53
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 4/16/19		Analyst: **STP**
Iron	**0.078**	J	**0.015**	**0.080**	**mg/L**	1	4/16/2019 16:21
Manganese	**0.30**		**0.00026**	**0.0050**	**mg/L**	1	4/16/2019 16:21
1,4-DIOXANE BY SELECT ION MONITORING		Method: **SW8260B**					Analyst: **PM**
1,4-Dioxane	U		0.44	0.60	µg/L	1	4/10/2019 16:07
Surr: Toluene-d8	*125*	S		*74-124*	*%REC*	1	4/10/2019 16:07
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 04:54
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 04:54
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 04:54
1,1,2-Trichloroethane	**0.61**	J	**0.22**	**1.0**	**µg/L**	1	4/12/2019 04:54
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 04:54
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 04:54
1,1-Dichloroethene	**2.8**		**0.36**	**1.0**	**µg/L**	1	4/12/2019 04:54
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 04:54
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 04:54
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 04:54
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 04:54
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 04:54
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 04:54
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 04:54
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 04:54
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 04:54
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 04:54
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 04:54
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 04:54
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:54
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 04:54
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:54
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 04:54
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 04:54
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 04:54
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 04:54
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 04:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-13
Collection Date: 4/9/2019 10:00 AM

Work Order: 1904634
Lab ID: 1904634-13
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 04:54
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 04:54
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 04:54
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 04:54
Acetone	**2.4**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 04:54
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 04:54
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 04:54
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 04:54
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 04:54
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 04:54
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 04:54
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 04:54
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 04:54
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 04:54
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 04:54
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 04:54
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 04:54
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 04:54
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 04:54
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 04:54
cis-1,2-Dichloroethene	**280**		**1.9**	**5.0**	**µg/L**	5	4/13/2019 01:26
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 04:54
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 04:54
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 04:54
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 04:54
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 04:54
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 04:54
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 04:54
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 04:54
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 04:54
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 04:54
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 04:54
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 04:54
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 04:54
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 04:54
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 04:54
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 04:54
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 04:54
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 04:54
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 04:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-13
Collection Date: 4/9/2019 10:00 AM

Work Order: 1904634
Lab ID: 1904634-13
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 04:54
tert-Butyl alcohol	U		2.2	20	µg/L	1	4/12/2019 04:54
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 04:54
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 04:54
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 04:54
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 04:54
trans-1,2-Dichloroethene	**10**		**0.48**	**1.0**	**µg/L**	1	4/12/2019 04:54
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 04:54
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 04:54
Trichloroethene	**290**		**1.6**	**5.0**	**µg/L**	5	4/13/2019 01:26
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 04:54
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 04:54
Vinyl chloride	**49**		**0.53**	**1.0**	**µg/L**	1	4/12/2019 04:54
Surr: 1,2-Dichloroethane-d4	*98.8*			*75-120*	*%REC*	1	4/12/2019 04:54
Surr: 1,2-Dichloroethane-d4	*88.4*			*75-120*	*%REC*	5	4/13/2019 01:26
Surr: 4-Bromofluorobenzene	*98.8*			*80-110*	*%REC*	1	4/12/2019 04:54
Surr: 4-Bromofluorobenzene	*98.4*			*80-110*	*%REC*	5	4/13/2019 01:26
Surr: Dibromofluoromethane	*98.3*			*85-115*	*%REC*	1	4/12/2019 04:54
Surr: Dibromofluoromethane	*97.2*			*85-115*	*%REC*	5	4/13/2019 01:26
Surr: Toluene-d8	*100*			*85-110*	*%REC*	1	4/12/2019 04:54
Surr: Toluene-d8	*95.8*			*85-110*	*%REC*	5	4/13/2019 01:26
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **JDR**
Chloride	**72**		**6.2**	**20**	**mg/L**	20	4/15/2019 14:11
Sulfate	**110**		**6.9**	**20**	**mg/L**	20	4/15/2019 14:11
NITROGEN, NITRATE-NITRITE			Method: **E353.2 R2.0**				Analyst: **JZB**
Nitrogen, Nitrate-Nitrite	U		0.012	0.020	mg/L	1	4/12/2019 12:56
SULFIDE			Method: **SW9034**				Analyst: **RZM**
Sulfide	U		0.42	1.0	mg/L	1	4/16/2019 14:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-14
Collection Date: 4/9/2019 11:25 AM

Work Order: 1904634
Lab ID: 1904634-14
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
GASES IN WATER		Method: **RSK-175**					Analyst: **KB**
Ethane	U		0.21	5.0	µg/L	1	4/12/2019 15:14
Ethene	U		0.41	5.0	µg/L	1	4/12/2019 15:14
Methane	**44**		**0.64**	**5.0**	**µg/L**	1	4/12/2019 15:14
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 4/16/19		Analyst: **STP**
Iron	U		0.015	0.080	mg/L	1	4/16/2019 16:23
Manganese	**0.12**		**0.00026**	**0.0050**	**mg/L**	1	4/16/2019 16:23
1,4-DIOXANE BY SELECT ION MONITORING		Method: **SW8260B**					Analyst: **PM**
1,4-Dioxane	U		0.44	0.60	µg/L	1	4/10/2019 16:22
Surr: Toluene-d8	*90.2*			*74-124*	*%REC*	1	4/10/2019 16:22
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **BG**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/16/2019 18:00
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/16/2019 18:00
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/16/2019 18:00
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/16/2019 18:00
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/16/2019 18:00
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/16/2019 18:00
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/16/2019 18:00
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/16/2019 18:00
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/16/2019 18:00
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/16/2019 18:00
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/16/2019 18:00
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/16/2019 18:00
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/16/2019 18:00
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/16/2019 18:00
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/16/2019 18:00
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/16/2019 18:00
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/16/2019 18:00
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/16/2019 18:00
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/16/2019 18:00
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/16/2019 18:00
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/16/2019 18:00
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/16/2019 18:00
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/16/2019 18:00
2-Butanone	U		0.47	5.0	µg/L	1	4/16/2019 18:00
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/16/2019 18:00
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/16/2019 18:00
2-Hexanone	U		0.50	5.0	µg/L	1	4/16/2019 18:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-14
Collection Date: 4/9/2019 11:25 AM

Work Order: 1904634
Lab ID: 1904634-14
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/16/2019 18:00
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/16/2019 18:00
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/16/2019 18:00
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/16/2019 18:00
Acetone	**0.64**	J	**0.47**	**10**	**µg/L**	1	4/16/2019 18:00
Acrolein	U		0.38	1.0	µg/L	1	4/16/2019 18:00
Acrylonitrile	U		0.34	1.0	µg/L	1	4/16/2019 18:00
Benzene	U		0.42	1.0	µg/L	1	4/16/2019 18:00
Benzyl chloride	U		0.20	1.0	µg/L	1	4/16/2019 18:00
Bromobenzene	U		0.13	1.0	µg/L	1	4/16/2019 18:00
Bromochloromethane	U		0.15	1.0	µg/L	1	4/16/2019 18:00
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/16/2019 18:00
Bromoform	U		0.56	1.0	µg/L	1	4/16/2019 18:00
Bromomethane	U		0.29	1.0	µg/L	1	4/16/2019 18:00
Carbon disulfide	U		0.39	1.0	µg/L	1	4/16/2019 18:00
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/16/2019 18:00
Chlorobenzene	U		0.21	1.0	µg/L	1	4/16/2019 18:00
Chloroethane	U		0.68	1.0	µg/L	1	4/16/2019 18:00
Chloroform	U		0.46	1.0	µg/L	1	4/16/2019 18:00
Chloromethane	U		0.68	1.0	µg/L	1	4/16/2019 18:00
cis-1,2-Dichloroethene	**65**		**0.38**	**1.0**	**µg/L**	1	4/16/2019 18:00
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/16/2019 18:00
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/16/2019 18:00
Dibromomethane	U		0.16	1.0	µg/L	1	4/16/2019 18:00
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/16/2019 18:00
Ethylbenzene	U		0.29	1.0	µg/L	1	4/16/2019 18:00
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/16/2019 18:00
Hexachloroethane	U		0.15	1.0	µg/L	1	4/16/2019 18:00
Hexane	U		0.18	1.0	µg/L	1	4/16/2019 18:00
Iodomethane	U		0.44	1.0	µg/L	1	4/16/2019 18:00
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/16/2019 18:00
m,p-Xylene	U		0.53	2.0	µg/L	1	4/16/2019 18:00
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/16/2019 18:00
Methylene chloride	U		0.16	5.0	µg/L	1	4/16/2019 18:00
Naphthalene	U		0.14	5.0	µg/L	1	4/16/2019 18:00
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/16/2019 18:00
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/16/2019 18:00
o-Xylene	U		0.19	1.0	µg/L	1	4/16/2019 18:00
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/16/2019 18:00
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/16/2019 18:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-14
Collection Date: 4/9/2019 11:25 AM

Work Order: 1904634
Lab ID: 1904634-14
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Styrene	U		0.19	1.0	µg/L	1	4/16/2019 18:00
tert-Butyl alcohol	U		2.2	20	µg/L	1	4/16/2019 18:00
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/16/2019 18:00
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/16/2019 18:00
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/16/2019 18:00
Toluene	U		0.32	1.0	µg/L	1	4/16/2019 18:00
trans-1,2-Dichloroethene	**1.0**		**0.48**	**1.0**	**µg/L**	1	4/16/2019 18:00
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/16/2019 18:00
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/16/2019 18:00
Trichloroethene	**9.6**		**0.33**	**1.0**	**µg/L**	1	4/16/2019 18:00
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/16/2019 18:00
Vinyl acetate	U		0.42	5.0	µg/L	1	4/16/2019 18:00
Vinyl chloride	**0.66**	J	**0.53**	**1.0**	**µg/L**	1	4/16/2019 18:00
Surr: 1,2-Dichloroethane-d4	*96.0*			*75-120*	*%REC*	1	4/16/2019 18:00
Surr: 4-Bromofluorobenzene	*100*			*80-110*	*%REC*	1	4/16/2019 18:00
Surr: Dibromofluoromethane	*97.2*			*85-115*	*%REC*	1	4/16/2019 18:00
Surr: Toluene-d8	*101*			*85-110*	*%REC*	1	4/16/2019 18:00
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **JDR**
Chloride	**75**		**3.1**	**10**	**mg/L**	10	4/15/2019 14:28
Sulfate	**65**		**3.4**	**10**	**mg/L**	10	4/15/2019 14:28
NITROGEN, NITRATE-NITRITE			Method: **E353.2 R2.0**				Analyst: **JZB**
Nitrogen, Nitrate-Nitrite	**0.82**		**0.012**	**0.020**	**mg/L**	1	4/12/2019 12:57
SULFIDE			Method: **SW9034**				Analyst: **RZM**
Sulfide	U		0.42	1.0	mg/L	1	4/16/2019 14:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-15
Collection Date: 4/9/2019 12:20 PM

Work Order: 1904634
Lab ID: 1904634-15
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 05:27
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 05:27
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 05:27
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 05:27
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 05:27
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 05:27
1,1-Dichloroethene	**1.0**		**0.36**	**1.0**	**µg/L**	1	4/12/2019 05:27
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 05:27
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 05:27
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 05:27
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 05:27
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 05:27
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 05:27
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 05:27
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 05:27
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 05:27
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 05:27
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 05:27
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 05:27
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 05:27
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 05:27
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 05:27
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 05:27
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 05:27
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 05:27
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 05:27
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 05:27
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 05:27
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 05:27
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 05:27
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 05:27
Acetone	**0.99**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 05:27
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 05:27
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 05:27
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 05:27
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 05:27
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 05:27
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 05:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-15
Collection Date: 4/9/2019 12:20 PM

Work Order: 1904634
Lab ID: 1904634-15
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 05:27
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 05:27
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 05:27
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 05:27
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 05:27
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 05:27
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 05:27
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 05:27
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 05:27
cis-1,2-Dichloroethene	**210**		**1.9**	**5.0**	**µg/L**	5	4/13/2019 01:48
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 05:27
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 05:27
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 05:27
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 05:27
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 05:27
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 05:27
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 05:27
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 05:27
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 05:27
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 05:27
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 05:27
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 05:27
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 05:27
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 05:27
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 05:27
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 05:27
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 05:27
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 05:27
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 05:27
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 05:27
tert-Butyl alcohol	U		2.2	20	µg/L	1	4/12/2019 05:27
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 05:27
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 05:27
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 05:27
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 05:27
trans-1,2-Dichloroethene	**8.8**		**0.48**	**1.0**	**µg/L**	1	4/12/2019 05:27
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 05:27
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 05:27
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 05:27
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 05:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: COL-GW-15
Collection Date: 4/9/2019 12:20 PM

Work Order: 1904634
Lab ID: 1904634-15
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 05:27
Vinyl chloride	**75**		**0.53**	**1.0**	**µg/L**	1	4/12/2019 05:27
Surr: 1,2-Dichloroethane-d4	*99.2*			*75-120*	*%REC*	1	4/12/2019 05:27
Surr: 1,2-Dichloroethane-d4	*87.6*			*75-120*	*%REC*	5	4/13/2019 01:48
Surr: 4-Bromofluorobenzene	*99.6*			*80-110*	*%REC*	1	4/12/2019 05:27
Surr: 4-Bromofluorobenzene	*98.0*			*80-110*	*%REC*	5	4/13/2019 01:48
Surr: Dibromofluoromethane	*95.4*			*85-115*	*%REC*	1	4/12/2019 05:27
Surr: Dibromofluoromethane	*94.4*			*85-115*	*%REC*	5	4/13/2019 01:48
Surr: Toluene-d8	*98.8*			*85-110*	*%REC*	1	4/12/2019 05:27
Surr: Toluene-d8	*94.6*			*85-110*	*%REC*	5	4/13/2019 01:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: EB
Collection Date: 4/9/2019 12:30 PM

Work Order: 1904634
Lab ID: 1904634-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
GASES IN WATER		Method: **RSK-175**					Analyst: **KB**
Ethane	U		0.21	5.0	µg/L	1	4/12/2019 15:11
Ethene	U		0.41	5.0	µg/L	1	4/12/2019 15:11
Methane	U		0.64	5.0	µg/L	1	4/12/2019 15:11
METALS BY ICP-MS (DISSOLVED)		Method: **SW6020A**			Prep: FILTER / 4/16/19		Analyst: **STP**
Iron	U		0.015	0.080	mg/L	1	4/16/2019 16:24
Manganese	U		0.00026	0.0050	mg/L	1	4/16/2019 16:24
1,4-DIOXANE BY SELECT ION MONITORING		Method: **SW8260B**					Analyst: **PM**
1,4-Dioxane	U		0.44	0.60	µg/L	1	4/10/2019 16:37
Surr: Toluene-d8	*114*			*74-124*	*%REC*	1	4/10/2019 16:37
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 05:44
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 05:44
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 05:44
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 05:44
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 05:44
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 05:44
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 05:44
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 05:44
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 05:44
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 05:44
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 05:44
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 05:44
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 05:44
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 05:44
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 05:44
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 05:44
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 05:44
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 05:44
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 05:44
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 05:44
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 05:44
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 05:44
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 05:44
2-Butanone	**5.2**		**0.47**	**5.0**	**µg/L**	1	4/12/2019 05:44
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 05:44
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 05:44
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 05:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: EB
Collection Date: 4/9/2019 12:30 PM

Work Order: 1904634
Lab ID: 1904634-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 05:44
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 05:44
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 05:44
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 05:44
Acetone	**20**		**0.47**	**10**	**µg/L**	1	4/12/2019 05:44
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 05:44
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 05:44
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 05:44
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 05:44
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 05:44
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 05:44
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 05:44
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 05:44
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 05:44
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 05:44
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 05:44
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 05:44
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 05:44
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 05:44
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 05:44
cis-1,2-Dichloroethene	**0.47**	J	**0.38**	**1.0**	**µg/L**	1	4/12/2019 05:44
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 05:44
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 05:44
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 05:44
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 05:44
Ethylbenzene	**0.43**	J	**0.29**	**1.0**	**µg/L**	1	4/12/2019 05:44
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 05:44
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 05:44
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 05:44
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 05:44
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 05:44
m,p-Xylene	**1.9**	J	**0.53**	**2.0**	**µg/L**	1	4/12/2019 05:44
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 05:44
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 05:44
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 05:44
n-Butylbenzene	U		0.090	1.0	µg/L	1	4/12/2019 05:44
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 05:44
o-Xylene	**0.47**	J	**0.19**	**1.0**	**µg/L**	1	4/12/2019 05:44
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 05:44
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 05:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: EB
Collection Date: 4/9/2019 12:30 PM

Work Order: 1904634
Lab ID: 1904634-16
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 05:44
tert-Butyl alcohol	**5.2**	J	**2.2**	**20**	**µg/L**	1	4/12/2019 05:44
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 05:44
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 05:44
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 05:44
Toluene	**1.2**		**0.32**	**1.0**	**µg/L**	1	4/12/2019 05:44
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 05:44
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 05:44
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 05:44
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 05:44
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 05:44
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 05:44
Vinyl chloride	U		0.53	1.0	µg/L	1	4/12/2019 05:44
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	4/12/2019 05:44
Surr: 4-Bromofluorobenzene	*98.6*			*80-110*	*%REC*	1	4/12/2019 05:44
Surr: Dibromofluoromethane	*98.6*			*85-115*	*%REC*	1	4/12/2019 05:44
Surr: Toluene-d8	*98.9*			*85-110*	*%REC*	1	4/12/2019 05:44
ANIONS BY ION CHROMATOGRAPHY			Method: **SW9056A**				Analyst: **JDR**
Chloride	**0.37**	J	**0.31**	**1.0**	**mg/L**	1	4/15/2019 13:07
Sulfate	U		0.34	1.0	mg/L	1	4/15/2019 13:07
NITROGEN, NITRATE-NITRITE			Method: **E353.2 R2.0**				Analyst: **JZB**
Nitrogen, Nitrate-Nitrite	U		0.012	0.020	mg/L	1	4/12/2019 12:58
SULFIDE			Method: **SW9034**				Analyst: **RZM**
Sulfide	U		0.42	1.0	mg/L	1	4/16/2019 14:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: Trip Blank
Collection Date: 4/9/2019

Work Order: 1904634
Lab ID: 1904634-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **PM**
1,1,1,2-Tetrachloroethane	U		0.28	1.0	µg/L	1	4/12/2019 01:18
1,1,1-Trichloroethane	U		0.33	1.0	µg/L	1	4/12/2019 01:18
1,1,2,2-Tetrachloroethane	U		0.17	1.0	µg/L	1	4/12/2019 01:18
1,1,2-Trichloroethane	U		0.22	1.0	µg/L	1	4/12/2019 01:18
1,1,2-Trichlorotrifluoroethane	U		0.18	1.0	µg/L	1	4/12/2019 01:18
1,1-Dichloroethane	U		0.48	1.0	µg/L	1	4/12/2019 01:18
1,1-Dichloroethene	U		0.36	1.0	µg/L	1	4/12/2019 01:18
1,1-Dichloropropene	U		0.28	1.0	µg/L	1	4/12/2019 01:18
1,2,3-Trichlorobenzene	U		0.29	1.0	µg/L	1	4/12/2019 01:18
1,2,3-Trichloropropane	U		0.29	1.0	µg/L	1	4/12/2019 01:18
1,2,4-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 01:18
1,2,4-Trimethylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 01:18
1,2-Dibromo-3-chloropropane	U		0.43	1.0	µg/L	1	4/12/2019 01:18
1,2-Dibromoethane	U		0.17	1.0	µg/L	1	4/12/2019 01:18
1,2-Dichlorobenzene	U		0.12	1.0	µg/L	1	4/12/2019 01:18
1,2-Dichloroethane	U		0.11	1.0	µg/L	1	4/12/2019 01:18
1,2-Dichloropropane	U		0.34	1.0	µg/L	1	4/12/2019 01:18
1,3,5-Trichlorobenzene	U		0.25	1.0	µg/L	1	4/12/2019 01:18
1,3,5-Trimethylbenzene	U		0.15	1.0	µg/L	1	4/12/2019 01:18
1,3-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 01:18
1,3-Dichloropropane	U		0.14	1.0	µg/L	1	4/12/2019 01:18
1,4-Dichlorobenzene	U		0.13	1.0	µg/L	1	4/12/2019 01:18
2,2-Dichloropropane	U		0.31	1.0	µg/L	1	4/12/2019 01:18
2-Butanone	U		0.47	5.0	µg/L	1	4/12/2019 01:18
2-Chloroethyl vinyl ether	U		0.14	1.0	µg/L	1	4/12/2019 01:18
2-Chlorotoluene	U		0.14	1.0	µg/L	1	4/12/2019 01:18
2-Hexanone	U		0.50	5.0	µg/L	1	4/12/2019 01:18
2-Methylnaphthalene	U		0.28	5.0	µg/L	1	4/12/2019 01:18
4-Chlorotoluene	U		0.18	1.0	µg/L	1	4/12/2019 01:18
4-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 01:18
4-Methyl-2-pentanone	U		0.52	1.0	µg/L	1	4/12/2019 01:18
Acetone	**0.89**	J	**0.47**	**10**	**µg/L**	1	4/12/2019 01:18
Acrolein	U		0.38	1.0	µg/L	1	4/12/2019 01:18
Acrylonitrile	U		0.34	1.0	µg/L	1	4/12/2019 01:18
Benzene	U		0.42	1.0	µg/L	1	4/12/2019 01:18
Benzyl chloride	U		0.20	1.0	µg/L	1	4/12/2019 01:18
Bromobenzene	U		0.13	1.0	µg/L	1	4/12/2019 01:18
Bromochloromethane	U		0.15	1.0	µg/L	1	4/12/2019 01:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: Trip Blank
Collection Date: 4/9/2019

Work Order: 1904634
Lab ID: 1904634-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Bromodichloromethane	U		0.22	1.0	µg/L	1	4/12/2019 01:18
Bromoform	U		0.56	1.0	µg/L	1	4/12/2019 01:18
Bromomethane	U		0.29	1.0	µg/L	1	4/12/2019 01:18
Carbon disulfide	U		0.39	1.0	µg/L	1	4/12/2019 01:18
Carbon tetrachloride	U		0.32	1.0	µg/L	1	4/12/2019 01:18
Chlorobenzene	U		0.21	1.0	µg/L	1	4/12/2019 01:18
Chloroethane	U		0.68	1.0	µg/L	1	4/12/2019 01:18
Chloroform	U		0.46	1.0	µg/L	1	4/12/2019 01:18
Chloromethane	U		0.68	1.0	µg/L	1	4/12/2019 01:18
cis-1,2-Dichloroethene	U		0.38	1.0	µg/L	1	4/12/2019 01:18
cis-1,3-Dichloropropene	U		0.13	1.0	µg/L	1	4/12/2019 01:18
Dibromochloromethane	U		0.20	1.0	µg/L	1	4/12/2019 01:18
Dibromomethane	U		0.16	1.0	µg/L	1	4/12/2019 01:18
Dichlorodifluoromethane	U		0.30	1.0	µg/L	1	4/12/2019 01:18
Ethylbenzene	U		0.29	1.0	µg/L	1	4/12/2019 01:18
Hexachlorobutadiene	U		0.15	1.0	µg/L	1	4/12/2019 01:18
Hexachloroethane	U		0.15	1.0	µg/L	1	4/12/2019 01:18
Hexane	U		0.18	1.0	µg/L	1	4/12/2019 01:18
Iodomethane	U		0.44	1.0	µg/L	1	4/12/2019 01:18
Isopropylbenzene	U		0.17	1.0	µg/L	1	4/12/2019 01:18
m,p-Xylene	U		0.53	2.0	µg/L	1	4/12/2019 01:18
Methyl tert-butyl ether	U		0.21	1.0	µg/L	1	4/12/2019 01:18
Methylene chloride	U		0.16	5.0	µg/L	1	4/12/2019 01:18
Naphthalene	U		0.14	5.0	µg/L	1	4/12/2019 01:18
n-Butylbenzene	**0.090**	J	**0.090**	**1.0**	**µg/L**	1	4/12/2019 01:18
n-Propylbenzene	U		0.16	1.0	µg/L	1	4/12/2019 01:18
o-Xylene	U		0.19	1.0	µg/L	1	4/12/2019 01:18
p-Isopropyltoluene	U		0.10	1.0	µg/L	1	4/12/2019 01:18
sec-Butylbenzene	U		0.11	1.0	µg/L	1	4/12/2019 01:18
Styrene	U		0.19	1.0	µg/L	1	4/12/2019 01:18
tert-Butyl alcohol	U		2.2	20	µg/L	1	4/12/2019 01:18
tert-Butylbenzene	U		0.10	1.0	µg/L	1	4/12/2019 01:18
Tetrachloroethene	U		0.28	1.0	µg/L	1	4/12/2019 01:18
Tetrahydrofuran	U		0.49	1.0	µg/L	1	4/12/2019 01:18
Toluene	U		0.32	1.0	µg/L	1	4/12/2019 01:18
trans-1,2-Dichloroethene	U		0.48	1.0	µg/L	1	4/12/2019 01:18
trans-1,3-Dichloropropene	U		0.15	1.0	µg/L	1	4/12/2019 01:18
trans-1,4-Dichloro-2-butene	U		0.58	2.0	µg/L	1	4/12/2019 01:18
Trichloroethene	U		0.33	1.0	µg/L	1	4/12/2019 01:18
Trichlorofluoromethane	U		0.24	1.0	µg/L	1	4/12/2019 01:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *18-Apr-19*

Client: BB&E, Inc.
Project: SSW Collis 2019 LTM Task 1
Sample ID: Trip Blank
Collection Date: 4/9/2019

Work Order: 1904634
Lab ID: 1904634-17
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Vinyl acetate	U		0.42	5.0	µg/L	1	4/12/2019 01:18
Vinyl chloride	U		0.53	1.0	µg/L	1	4/12/2019 01:18
Surr: 1,2-Dichloroethane-d4	*98.5*			*75-120*	*%REC*	1	4/12/2019 01:18
Surr: 4-Bromofluorobenzene	*98.2*			*80-110*	*%REC*	1	4/12/2019 01:18
Surr: Dibromofluoromethane	*96.7*			*85-115*	*%REC*	1	4/12/2019 01:18
Surr: Toluene-d8	*99.8*			*85-110*	*%REC*	1	4/12/2019 01:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 18-Apr-19

Client: BB&E, Inc.

Work Order: 1904634

Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258414** Instrument ID **GC10** Method: **RSK-175**

MBLK Sample ID: **MBLK-190412-R258414** Units: **µg/L** Analysis Date: **4/12/2019 02:22 PM**

Client ID: Run ID: **GC10_190412A** SeqNo: **5605324** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	U	5.0								
Ethene	U	5.0								
Methane	U	5.0								

LCS Sample ID: **LCS-190412-R258414** Units: **µg/L** Analysis Date: **4/12/2019 02:20 PM**

Client ID: Run ID: **GC10_190412A** SeqNo: **5605323** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	29.96	5.0	36.1	0	83	75-125	0			
Ethene	36.22	5.0	33.7	0	107	75-125	0			
Methane	15.83	5.0	19.2	0	82.4	75-125	0			

MS Sample ID: **1904634-12E MS** Units: **µg/L** Analysis Date: **4/12/2019 03:55 PM**

Client ID: **COL-GW-12** Run ID: **GC10_190412A** SeqNo: **5605350** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	69.18	5.0	36.1	0	192	70-130	0			S
Ethene	56.84	5.0	33.7	0	169	70-130	0			S
Methane	343.1	5.0	19.2	329.2	72.3	70-130	0			EO

MSD Sample ID: **1904634-12E MSD** Units: **µg/L** Analysis Date: **4/12/2019 03:57 PM**

Client ID: **COL-GW-12** Run ID: **GC10_190412A** SeqNo: **5605351** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	51.95	5.0	36.1	0	144	70-130	69.18	28.4	30	S
Ethene	63.28	5.0	33.7	0	188	70-130	56.84	10.7	30	S
Methane	339.9	5.0	19.2	329.2	55.9	70-130	343.1	0.922	30	SEO

The following samples were analyzed in this batch:

1904634-05E	1904634-12E	1904634-13E
1904634-14E	1904634-16E	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **134645** Instrument ID **ICPMS3** Method: **SW6020A** **(Dissolve)**

MBLK Sample ID: **MBLK-134645-134645** Units: **mg/L** Analysis Date: **4/16/2019 04:08 PM**
Client ID: Run ID: **ICPMS3_190416A** SeqNo: **5609861** Prep Date: **4/16/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.080								
Manganese	U	0.0050								

LCS Sample ID: **LCS-134645-134645** Units: **mg/L** Analysis Date: **4/16/2019 04:09 PM**
Client ID: Run ID: **ICPMS3_190416A** SeqNo: **5609862** Prep Date: **4/16/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.593	0.080	10	0	95.9	80-120	0			
Manganese	0.09324	0.0050	0.1	0	93.2	80-120	0			

MS Sample ID: **1904634-12BMS** Units: **mg/L** Analysis Date: **4/16/2019 04:17 PM**
Client ID: **COL-GW-12** Run ID: **ICPMS3_190416A** SeqNo: **5609998** Prep Date: **4/16/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.69	0.080	10	0.1015	106	75-125	0			
Manganese	0.3833	0.0050	0.1	0.2862	97.1	75-125	0			

MSD Sample ID: **1904634-12BMSD** Units: **mg/L** Analysis Date: **4/16/2019 04:19 PM**
Client ID: **COL-GW-12** Run ID: **ICPMS3_190416A** SeqNo: **5609999** Prep Date: **4/16/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.63	0.080	10	0.1015	105	75-125	10.69	0.625	20	
Manganese	0.3836	0.0050	0.1	0.2862	97.5	75-125	0.3833	0.0892	20	

The following samples were analyzed in this batch:

1904634-05B	1904634-12B	1904634-13B
1904634-14B	1904634-16B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258206** Instrument ID **VMS9** Method: **SW8260B**

MBLK Sample ID: **VBLKW2-190410-R258206** Units: **µg/L** Analysis Date: **4/10/2019 01:35 PM**
Client ID: Run ID: **VMS9_190410A** SeqNo: **5601263** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	U	1.0								
Surr: Toluene-d8	*9.59*	0	*10*	0	*95.9*	*74-124*	0			

LCS Sample ID: **VLCS2-190410-R258206** Units: **µg/L** Analysis Date: **4/10/2019 12:50 PM**
Client ID: Run ID: **VMS9_190410A** SeqNo: **5601262** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	51.65	1.0	40	0	129	70-130	0			
Surr: Toluene-d8	*8.11*	0	*10*	0	*81.1*	*74-124*	0			

MS Sample ID: **1904634-12A MS** Units: **µg/L** Analysis Date: **4/10/2019 04:52 PM**
Client ID: **COL-GW-12** Run ID: **VMS9_190410A** SeqNo: **5601274** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	53.62	1.0	40	0	134	70-130	0			S
Surr: Toluene-d8	*8.87*	0	*10*	0	*88.7*	*74-124*	0			

MSD Sample ID: **1904634-12A MSD** Units: **µg/L** Analysis Date: **4/10/2019 05:07 PM**
Client ID: **COL-GW-12** Run ID: **VMS9_190410A** SeqNo: **5601275** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	53.3	1.0	40	0	133	70-130	53.62	0.599	30	S
Surr: Toluene-d8	*8.87*	0	*10*	0	*88.7*	*74-124*	8.87	*0*	*30*	

The following samples were analyzed in this batch:

1904634-04A	1904634-05A	1904634-12A
1904634-13A	1904634-14A	1904634-16A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258364** Instrument ID **VMS10** Method: **SW8260C**

MBLK Sample ID: **VBLKW2-190411-R258364** Units: **µg/L** Analysis Date: **4/12/2019 12:45 PM**
Client ID: Run ID: **VMS10_190411B** SeqNo: **5604221** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	1.0								
1,1,1-Trichloroethane	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1,2-Trichlorotrifluoroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,1-Dichloropropene	U	1.0								
1,2,3-Trichlorobenzene	U	1.0								
1,2,3-Trichloropropane	U	1.0								
1,2,4-Trichlorobenzene	U	1.0								
1,2,4-Trimethylbenzene	U	1.0								
1,2-Dibromo-3-chloropropane	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichlorobenzene	U	1.0								
1,2-Dichloroethane	U	1.0								
1,2-Dichloropropane	U	1.0								
1,3,5-Trichlorobenzene	U	1.0								
1,3,5-Trimethylbenzene	U	1.0								
1,3-Dichlorobenzene	U	1.0								
1,3-Dichloropropane	U	1.0								
1,4-Dichlorobenzene	U	1.0								
2,2-Dichloropropane	U	1.0								
2-Butanone	U	5.0								
2-Chloroethyl vinyl ether	U	1.0								
2-Chlorotoluene	U	1.0								
2-Hexanone	U	5.0								
2-Methylnaphthalene	0.41	5.0								J
4-Chlorotoluene	U	1.0								
4-Isopropyltoluene	U	1.0								
4-Methyl-2-pentanone	U	1.0								
Acetone	U	10								
Acrolein	U	1.0								
Acrylonitrile	U	1.0								
Benzene	U	1.0								
Benzyl chloride	U	1.0								
Bromobenzene	U	1.0								
Bromochloromethane	U	1.0								
Bromodichloromethane	U	1.0								
Bromoform	U	1.0								
Bromomethane	U	1.0								
Carbon disulfide	U	1.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R258364**	Instrument ID **VMS10**		Method: **SW8260C**					
Carbon tetrachloride	U	1.0						
Chlorobenzene	U	1.0						
Chloroethane	U	1.0						
Chloroform	U	1.0						
Chloromethane	U	1.0						
cis-1,2-Dichloroethene	U	1.0						
cis-1,3-Dichloropropene	U	1.0						
Dibromochloromethane	U	1.0						
Dibromomethane	U	1.0						
Dichlorodifluoromethane	U	1.0						
Ethylbenzene	U	1.0						
Hexachlorobutadiene	0.22	1.0						J
Hexachloroethane	U	1.0						
Hexane	U	1.0						
Iodomethane	U	1.0						
Isopropylbenzene	U	1.0						
m,p-Xylene	U	2.0						
Methyl tert-butyl ether	U	1.0						
Methylene chloride	U	5.0						
Naphthalene	U	5.0						
n-Butylbenzene	0.19	1.0						J
n-Propylbenzene	U	1.0						
o-Xylene	U	1.0						
p-Isopropyltoluene	U	1.0						
sec-Butylbenzene	U	1.0						
Styrene	U	1.0						
tert-Butyl alcohol	U	20						
tert-Butylbenzene	U	1.0						
Tetrachloroethene	U	1.0						
Tetrahydrofuran	U	1.0						
Toluene	U	1.0						
trans-1,2-Dichloroethene	U	1.0						
trans-1,3-Dichloropropene	U	1.0						
trans-1,4-Dichloro-2-butene	U	2.0						
Trichloroethene	U	1.0						
Trichlorofluoromethane	U	1.0						
Vinyl acetate	U	5.0						
Vinyl chloride	U	1.0						
Surr: 1,2-Dichloroethane-d4	*19.85*	0	*20*	0	*99.2*	*75-120*	0	
Surr: 4-Bromofluorobenzene	*19.78*	0	*20*	0	*98.9*	*80-110*	0	
Surr: Dibromofluoromethane	*19.63*	0	*20*	0	*98.2*	*85-115*	0	
Surr: Toluene-d8	*19.8*	0	*20*	0	*99*	*85-110*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258364** Instrument ID **VMS10** Method: **SW8260C**

LCS Sample ID: **VLCSW2-190411-R258364** Units: **µg/L** Analysis Date: **4/11/2019 11:55 PM**
Client ID: Run ID: **VMS10_190411B** SeqNo: **5604200** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.99	1.0	20	0	100	73-114	0			
1,1,1-Trichloroethane	21.5	1.0	20	0	108	75-130	0			
1,1,2,2-Tetrachloroethane	20.31	1.0	20	0	102	75-130	0			
1,1,2-Trichloroethane	19.59	1.0	20	0	98	75-125	0			
1,1-Dichloroethane	20.58	1.0	20	0	103	68-142	0			
1,1-Dichloroethene	23.16	1.0	20	0	116	70-145	0			
1,1-Dichloropropene	19.14	1.0	20	0	95.7	75-135	0			
1,2,3-Trichlorobenzene	18.49	1.0	20	0	92.4	70-140	0			
1,2,3-Trichloropropane	19.33	1.0	20	0	96.6	75-125	0			
1,2,4-Trichlorobenzene	19.97	1.0	20	0	99.8	70-135	0			
1,2,4-Trimethylbenzene	19.08	1.0	20	0	95.4	75-130	0			
1,2-Dibromo-3-chloropropane	19.72	1.0	20	0	98.6	60-130	0			
1,2-Dibromoethane	25.48	1.0	20	0	127	67-155	0			
1,2-Dichlorobenzene	19.9	1.0	20	0	99.5	70-130	0			
1,2-Dichloroethane	20.48	1.0	20	0	102	78-125	0			
1,2-Dichloropropane	19.62	1.0	20	0	98.1	75-125	0			
1,3,5-Trimethylbenzene	20.11	1.0	20	0	101	75-130	0			
1,3-Dichlorobenzene	19.67	1.0	20	0	98.4	75-130	0			
1,3-Dichloropropane	19.46	1.0	20	0	97.3	75-125	0			
1,4-Dichlorobenzene	20.1	1.0	20	0	100	75-130	0			
2,2-Dichloropropane	18.15	1.0	20	0	90.8	43-150	0			
2-Butanone	19.8	5.0	20	0	99	55-150	0			
2-Chlorotoluene	21	1.0	20	0	105	76-117	0			
2-Hexanone	19.57	5.0	20	0	97.8	60-135	0			
4-Chlorotoluene	19.61	1.0	20	0	98	80-125	0			
4-Isopropyltoluene	20.01	1.0	20	0	100	61-164	0			
4-Methyl-2-pentanone	29.09	1.0	20	0	145	77-178	0			
Acetone	19.34	10	20	0	96.7	60-160	0			
Acrylonitrile	19.97	1.0	20	0	99.8	60-140	0			
Benzene	20.06	1.0	20	0	100	85-125	0			
Bromobenzene	19.7	1.0	20	0	98.5	80-125	0			
Bromochloromethane	22.01	1.0	20	0	110	72-141	0			
Bromodichloromethane	19.54	1.0	20	0	97.7	75-125	0			
Bromoform	17.82	1.0	20	0	89.1	60-125	0			
Bromomethane	37.29	1.0	20	0	186	30-185	0			S
Carbon disulfide	21.38	1.0	20	0	107	60-165	0			
Carbon tetrachloride	20.28	1.0	20	0	101	65-140	0			
Chlorobenzene	19.76	1.0	20	0	98.8	80-120	0			
Chloroethane	21.19	1.0	20	0	106	31-172	0			
Chloroform	19.75	1.0	20	0	98.8	80-130	0			
Chloromethane	17.71	1.0	20	0	88.6	46-148	0			
cis-1,2-Dichloroethene	20.5	1.0	20	0	102	75-134	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258364**	Instrument ID **VMS10**		Method: **SW8260C**					
cis-1,3-Dichloropropene	18.95	1.0	20	0	94.8	70-130	0	
Dibromochloromethane	18.13	1.0	20	0	90.6	60-115	0	
Dibromomethane	20.36	1.0	20	0	102	79-126	0	
Dichlorodifluoromethane	16.99	1.0	20	0	85	20-120	0	
Ethylbenzene	19.74	1.0	20	0	98.7	76-123	0	
Hexachlorobutadiene	22.72	1.0	20	0	114	70-155	0	
Hexachloroethane	17.58	1.0	20	0	87.9	50-124	0	
Iodomethane	33.01	1.0	20	0	165	60-160	0	S
Isopropylbenzene	20.42	1.0	20	0	102	80-127	0	
m,p-Xylene	39.5	2.0	40	0	98.8	75-130	0	
Methyl tert-butyl ether	21.52	1.0	20	0	108	68-129	0	
Methylene chloride	19.26	5.0	20	0	96.3	72-125	0	
Naphthalene	19.47	5.0	20	0	97.4	55-160	0	
n-Butylbenzene	20.47	1.0	20	0	102	75-145	0	
n-Propylbenzene	19.44	1.0	20	0	97.2	76-116	0	
o-Xylene	19.73	1.0	20	0	98.6	76-127	0	
p-Isopropyltoluene	20.01	1.0	20	0	100	61-164	0	
sec-Butylbenzene	20.14	1.0	20	0	101	80-134	0	
Styrene	20.09	1.0	20	0	100	83-137	0	
tert-Butyl alcohol	96.72	20	100	0	96.7	70-130	0	
tert-Butylbenzene	19.6	1.0	20	0	98	70-130	0	
Tetrachloroethene	20.9	1.0	20	0	104	68-166	0	
Tetrahydrofuran	18.58	1.0	20	0	92.9	54-139	0	
Toluene	19.52	1.0	20	0	97.6	76-125	0	
trans-1,2-Dichloroethene	20.93	1.0	20	0	105	80-140	0	
trans-1,3-Dichloropropene	18.33	1.0	20	0	91.6	56-132	0	
trans-1,4-Dichloro-2-butene	14.76	2.0	20	0	73.8	46-118	0	
Trichloroethene	20.86	1.0	20	0	104	84-130	0	
Trichlorofluoromethane	21.6	1.0	20	0	108	60-140	0	
Vinyl chloride	19.47	1.0	20	0	97.4	50-136	0	
Surr: 1,2-Dichloroethane-d4	*20.05*	0	*20*	0	*100*	*75-120*	0	
Surr: 4-Bromofluorobenzene	*19.46*	0	*20*	0	*97.3*	*80-110*	0	
Surr: Dibromofluoromethane	*19.94*	0	*20*	0	*99.7*	*85-115*	0	
Surr: Toluene-d8	*19.07*	0	*20*	0	*95.4*	*85-110*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258364** Instrument ID **VMS10** Method: **SW8260C**

MS Sample ID: **1904634-12A MS** Units: **µg/L** Analysis Date: **4/12/2019 06:50 AM**
Client ID: **COL-GW-12** Run ID: **VMS10_190411B** SeqNo: **5604219** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.88	1.0	20	0	99.4	73-114	0			
1,1,1-Trichloroethane	22.65	1.0	20	0	113	75-130	0			
1,1,2,2-Tetrachloroethane	19.13	1.0	20	0	95.6	75-130	0			
1,1,2-Trichloroethane	20.02	1.0	20	0.6	97.1	75-125	0			
1,1-Dichloroethane	21.7	1.0	20	0	108	68-142	0			
1,1-Dichloroethene	27.63	1.0	20	2.61	125	70-145	0			
1,1-Dichloropropene	19.75	1.0	20	0	98.8	75-135	0			
1,2,3-Trichlorobenzene	17.31	1.0	20	0.13	85.9	70-140	0			
1,2,3-Trichloropropane	19.01	1.0	20	0	95	75-125	0			
1,2,4-Trichlorobenzene	18.79	1.0	20	0.13	93.3	70-135	0			
1,2,4-Trimethylbenzene	19.7	1.0	20	0	98.5	75-130	0			
1,2-Dibromo-3-chloropropane	18.61	1.0	20	0	93	60-130	0			
1,2-Dibromoethane	26.06	1.0	20	0	130	67-155	0			
1,2-Dichlorobenzene	19.33	1.0	20	0	96.6	70-130	0			
1,2-Dichloroethane	20.32	1.0	20	0	102	78-125	0			
1,2-Dichloropropane	20.04	1.0	20	0	100	75-125	0			
1,3,5-Trimethylbenzene	20.88	1.0	20	0	104	75-130	0			
1,3-Dichlorobenzene	19.12	1.0	20	0	95.6	75-130	0			
1,3-Dichloropropane	20.12	1.0	20	0	101	75-125	0			
1,4-Dichlorobenzene	19.18	1.0	20	0	95.9	75-130	0			
2,2-Dichloropropane	16.33	1.0	20	0	81.6	43-150	0			
2-Butanone	20.34	5.0	20	0	102	55-150	0			
2-Chlorotoluene	21.64	1.0	20	0	108	76-117	0			
2-Hexanone	20.2	5.0	20	0	101	60-135	0			
4-Chlorotoluene	20.25	1.0	20	0	101	80-125	0			
4-Isopropyltoluene	19.78	1.0	20	0	98.9	61-164	0			
4-Methyl-2-pentanone	30.24	1.0	20	0	151	77-178	0			
Acetone	23.96	10	20	9.4	72.8	60-160	0			
Acrylonitrile	19.55	1.0	20	0	97.8	60-140	0			
Benzene	20.56	1.0	20	0.12	102	85-125	0			
Bromobenzene	20.13	1.0	20	0	101	80-125	0			
Bromochloromethane	21.6	1.0	20	0	108	72-141	0			
Bromodichloromethane	19.74	1.0	20	0	98.7	75-125	0			
Bromoform	17.18	1.0	20	0	85.9	60-125	0			
Bromomethane	25.66	1.0	20	0	128	30-185	0			
Carbon disulfide	22.38	1.0	20	0	112	60-165	0			
Carbon tetrachloride	21.63	1.0	20	0	108	65-140	0			
Chlorobenzene	20.32	1.0	20	0	102	80-120	0			
Chloroethane	23.66	1.0	20	0	118	31-172	0			
Chloroform	20.34	1.0	20	0	102	80-130	0			
Chloromethane	18.69	1.0	20	0.35	91.7	46-148	0			
cis-1,2-Dichloroethene	301.9	1.0	20	263.6	191	75-134	0			SEO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258364**	Instrument ID **VMS10**		Method: **SW8260C**					
cis-1,3-Dichloropropene	18.35	1.0	20	0	91.8	70-130	0	
Dibromochloromethane	18.41	1.0	20	0	92	60-115	0	
Dibromomethane	20.02	1.0	20	0	100	79-126	0	
Dichlorodifluoromethane	18.05	1.0	20	0	90.2	20-120	0	
Ethylbenzene	20.7	1.0	20	0	104	76-123	0	
Hexachlorobutadiene	20.39	1.0	20	0	102	70-155	0	
Hexachloroethane	16.62	1.0	20	0	83.1	50-124	0	
Iodomethane	27.36	1.0	20	0	137	60-160	0	
Isopropylbenzene	21.35	1.0	20	0	107	80-127	0	
m,p-Xylene	41.63	2.0	40	0.1	104	75-130	0	
Methyl tert-butyl ether	22.14	1.0	20	0	111	68-129	0	
Methylene chloride	20.13	5.0	20	0	101	72-125	0	
Naphthalene	18.77	5.0	20	0	93.8	55-160	0	
n-Butylbenzene	19.69	1.0	20	0	98.4	75-145	0	
n-Propylbenzene	20.37	1.0	20	0	102	76-116	0	
o-Xylene	20.59	1.0	20	0	103	76-127	0	
p-Isopropyltoluene	19.78	1.0	20	0	98.9	61-164	0	
sec-Butylbenzene	21.32	1.0	20	0	107	80-134	0	
Styrene	20.42	1.0	20	0	102	83-137	0	
tert-Butyl alcohol	106.1	20	100	0	106	70-130	0	
tert-Butylbenzene	21.08	1.0	20	0	105	70-130	0	
Tetrachloroethene	21.77	1.0	20	0	109	68-166	0	
Tetrahydrofuran	18.97	1.0	20	0	94.8	54-139	0	
Toluene	20.23	1.0	20	0	101	76-125	0	
trans-1,2-Dichloroethene	38.58	1.0	20	15.94	113	80-140	0	
trans-1,3-Dichloropropene	18.03	1.0	20	0	90.2	56-132	0	
trans-1,4-Dichloro-2-butene	14.55	2.0	20	0	72.8	46-118	0	
Trichloroethene	252.6	1.0	20	249.4	16.1	84-130	0	SEO
Trichlorofluoromethane	23.72	1.0	20	0	119	60-140	0	
Vinyl chloride	72.52	1.0	20	47.23	126	50-136	0	
Surr: 1,2-Dichloroethane-d4	*20.29*	0	*20*	0	*101*	*75-120*	0	
Surr: 4-Bromofluorobenzene	*19.89*	0	*20*	0	*99.4*	*80-110*	0	
Surr: Dibromofluoromethane	*20.13*	0	*20*	0	*101*	*85-115*	0	
Surr: Toluene-d8	*19.28*	0	*20*	0	*96.4*	*85-110*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258364** Instrument ID **VMS10** Method: **SW8260C**

MSD Sample ID: **1904634-12A MSD** Units: **µg/L** Analysis Date: **4/12/2019 07:07 AM**
Client ID: **COL-GW-12** Run ID: **VMS10_190411B** SeqNo: **5604220** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.68	1.0	20	0	98.4	73-114	19.88	1.01	30	
1,1,1-Trichloroethane	22.03	1.0	20	0	110	75-130	22.65	2.78	30	
1,1,2,2-Tetrachloroethane	19.73	1.0	20	0	98.6	75-130	19.13	3.09	30	
1,1,2-Trichloroethane	19.7	1.0	20	0.6	95.5	75-125	20.02	1.61	30	
1,1-Dichloroethane	20.73	1.0	20	0	104	68-142	21.7	4.57	30	
1,1-Dichloroethene	26.88	1.0	20	2.61	121	70-145	27.63	2.75	30	
1,1-Dichloropropene	19.44	1.0	20	0	97.2	75-135	19.75	1.58	30	
1,2,3-Trichlorobenzene	17.31	1.0	20	0.13	85.9	70-140	17.31	0	30	
1,2,3-Trichloropropane	19.37	1.0	20	0	96.8	75-125	19.01	1.88	30	
1,2,4-Trichlorobenzene	18.52	1.0	20	0.13	92	70-135	18.79	1.45	30	
1,2,4-Trimethylbenzene	18.83	1.0	20	0	94.2	75-130	19.7	4.52	30	
1,2-Dibromo-3-chloropropane	18.8	1.0	20	0	94	60-130	18.61	1.02	30	
1,2-Dibromoethane	25.64	1.0	20	0	128	67-155	26.06	1.62	30	
1,2-Dichlorobenzene	19.76	1.0	20	0	98.8	70-130	19.33	2.2	30	
1,2-Dichloroethane	20.07	1.0	20	0	100	78-125	20.32	1.24	30	
1,2-Dichloropropane	19.76	1.0	20	0	98.8	75-125	20.04	1.41	30	
1,3,5-Trimethylbenzene	20.16	1.0	20	0	101	75-130	20.88	3.51	30	
1,3-Dichlorobenzene	19.01	1.0	20	0	95	75-130	19.12	0.577	30	
1,3-Dichloropropane	19.73	1.0	20	0	98.6	75-125	20.12	1.96	30	
1,4-Dichlorobenzene	19.72	1.0	20	0	98.6	75-130	19.18	2.78	30	
2,2-Dichloropropane	15.17	1.0	20	0	75.8	43-150	16.33	7.37	30	
2-Butanone	19.37	5.0	20	0	96.8	55-150	20.34	4.89	30	
2-Chlorotoluene	20.98	1.0	20	0	105	76-117	21.64	3.1	30	
2-Hexanone	19.27	5.0	20	0	96.4	60-135	20.2	4.71	30	
4-Chlorotoluene	19.41	1.0	20	0	97	80-125	20.25	4.24	30	
4-Isopropyltoluene	19.27	1.0	20	0	96.4	61-164	19.78	2.61	30	
4-Methyl-2-pentanone	29.7	1.0	20	0	148	77-178	30.24	1.8	30	
Acetone	23.28	10	20	9.4	69.4	60-160	23.96	2.88	30	
Acrylonitrile	19.14	1.0	20	0	95.7	60-140	19.55	2.12	30	
Benzene	20.11	1.0	20	0.12	100	85-125	20.56	2.21	30	
Bromobenzene	19.53	1.0	20	0	97.6	80-125	20.13	3.03	30	
Bromochloromethane	20.76	1.0	20	0	104	72-141	21.6	3.97	30	
Bromodichloromethane	19.31	1.0	20	0	96.6	75-125	19.74	2.2	30	
Bromoform	17.3	1.0	20	0	86.5	60-125	17.18	0.696	30	
Bromomethane	28.27	1.0	20	0	141	30-185	25.66	9.68	30	
Carbon disulfide	21.6	1.0	20	0	108	60-165	22.38	3.55	30	
Carbon tetrachloride	20.86	1.0	20	0	104	65-140	21.63	3.62	30	
Chlorobenzene	19.69	1.0	20	0	98.4	80-120	20.32	3.15	30	
Chloroethane	34.07	1.0	20	0	170	31-172	23.66	36.1	30	R
Chloroform	19.52	1.0	20	0	97.6	80-130	20.34	4.11	30	
Chloromethane	17.9	1.0	20	0.35	87.8	46-148	18.69	4.32	30	
cis-1,2-Dichloroethene	307	1.0	20	263.6	217	75-134	301.9	1.68	30	SEO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258364** Instrument ID **VMS10** Method: **SW8260C**

cis-1,3-Dichloropropene	17.98	1.0	20	0	89.9	70-130	18.35	2.04	30	
Dibromochloromethane	17.69	1.0	20	0	88.4	60-115	18.41	3.99	30	
Dibromomethane	19.8	1.0	20	0	99	79-126	20.02	1.1	30	
Dichlorodifluoromethane	17.3	1.0	20	0	86.5	20-120	18.05	4.24	30	
Ethylbenzene	20	1.0	20	0	100	76-123	20.7	3.44	30	
Hexachlorobutadiene	20.84	1.0	20	0	104	70-155	20.39	2.18	30	
Hexachloroethane	16.9	1.0	20	0	84.5	50-124	16.62	1.67	30	
Iodomethane	29.11	1.0	20	0	146	60-160	27.36	6.2	30	
Isopropylbenzene	20.68	1.0	20	0	103	80-127	21.35	3.19	30	
m,p-Xylene	40	2.0	40	0.1	99.8	75-130	41.63	3.99	30	
Methyl tert-butyl ether	21.25	1.0	20	0	106	68-129	22.14	4.1	30	
Methylene chloride	19.54	5.0	20	0	97.7	72-125	20.13	2.97	30	
Naphthalene	18.82	5.0	20	0	94.1	55-160	18.77	0.266	30	
n-Butylbenzene	19.35	1.0	20	0	96.8	75-145	19.69	1.74	30	
n-Propylbenzene	19.5	1.0	20	0	97.5	76-116	20.37	4.36	30	
o-Xylene	19.79	1.0	20	0	99	76-127	20.59	3.96	30	
p-Isopropyltoluene	19.27	1.0	20	0	96.4	61-164	19.78	2.61	30	
sec-Butylbenzene	20.28	1.0	20	0	101	80-134	21.32	5	30	
Styrene	20.04	1.0	20	0	100	83-137	20.42	1.88	30	
tert-Butyl alcohol	103.5	20	100	0	104	70-130	106.1	2.46	30	
tert-Butylbenzene	20.34	1.0	20	0	102	70-130	21.08	3.57	30	
Tetrachloroethene	21.08	1.0	20	0	105	68-166	21.77	3.22	30	
Tetrahydrofuran	18.07	1.0	20	0	90.4	54-139	18.97	4.86	30	
Toluene	19.52	1.0	20	0	97.6	76-125	20.23	3.57	30	
trans-1,2-Dichloroethene	34.52	1.0	20	15.94	92.9	80-140	38.58	11.1	30	
trans-1,3-Dichloropropene	17.47	1.0	20	0	87.4	56-132	18.03	3.15	30	
trans-1,4-Dichloro-2-butene	13.61	2.0	20	0	68	46-118	14.55	6.68	30	
Trichloroethene	260.4	1.0	20	249.4	55.4	84-130	252.6	3.07	30	SEO
Trichlorofluoromethane	22.85	1.0	20	0	114	60-140	23.72	3.74	30	
Vinyl chloride	72.99	1.0	20	47.23	129	50-136	72.52	0.646	30	
Surr: 1,2-Dichloroethane-d4	*19.84*	0	*20*	0	*99.2*	*75-120*	20.29	*2.24*	*30*	
Surr: 4-Bromofluorobenzene	*19.79*	0	*20*	0	*99*	*80-110*	19.89	*0.504*	*30*	
Surr: Dibromofluoromethane	*19.36*	0	*20*	0	*96.8*	*85-115*	20.13	*3.9*	*30*	
Surr: Toluene-d8	*18.98*	0	*20*	0	*94.9*	*85-110*	19.28	*1.57*	*30*	

The following samples were analyzed in this batch:

1904634-01A	1904634-02A	1904634-03A
1904634-04A	1904634-05A	1904634-06A
1904634-07A	1904634-08A	1904634-09A
1904634-10A	1904634-11A	1904634-12A
1904634-13A	1904634-14A	1904634-15A
1904634-16A	1904634-17A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258492** Instrument ID **VMS11** Method: **SW8260C**

MBLK Sample ID: **VBLKW2-190412-R258492** Units: **µg/L** Analysis Date: **4/13/2019 12:20 PM**
Client ID: Run ID: **VMS11_190412B** SeqNo: **5606844** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	U	1.0								
Trichloroethene	U	1.0								
Surr: 1,2-Dichloroethane-d4	*17.11*	0	*20*	0	*85.6*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*19.46*	0	*20*	0	*97.3*	*80-110*	0			
Surr: Dibromofluoromethane	*19.06*	0	*20*	0	*95.3*	*85-115*	0			
Surr: Toluene-d8	*19.08*	0	*20*	0	*95.4*	*85-110*	0			

LCS Sample ID: **VLCSW3-190412-R258492** Units: **µg/L** Analysis Date: **4/12/2019 11:36 PM**
Client ID: Run ID: **VMS11_190412B** SeqNo: **5606810** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	20.41	1.0	20	0	102	75-134	0			
Trichloroethene	19.98	1.0	20	0	99.9	84-130	0			
Surr: 1,2-Dichloroethane-d4	*17.39*	0	*20*	0	*87*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*20.38*	0	*20*	0	*102*	*80-110*	0			
Surr: Dibromofluoromethane	*19.62*	0	*20*	0	*98.1*	*85-115*	0			
Surr: Toluene-d8	*19.17*	0	*20*	0	*95.8*	*85-110*	0			

MS Sample ID: **1904780-01A MS** Units: **µg/L** Analysis Date: **4/13/2019 08:01 AM**
Client ID: Run ID: **VMS11_190412B** SeqNo: **5606840** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	19.74	1.0	20	0.11	98.2	75-134	0			
Trichloroethene	20.63	1.0	20	0	103	84-130	0			
Surr: 1,2-Dichloroethane-d4	*17.25*	0	*20*	0	*86.2*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*20.03*	0	*20*	0	*100*	*80-110*	0			
Surr: Dibromofluoromethane	*19.88*	0	*20*	0	*99.4*	*85-115*	0			
Surr: Toluene-d8	*19*	0	*20*	0	*95*	*85-110*	0			

MS Sample ID: **1904792-01A MS** Units: **µg/L** Analysis Date: **4/13/2019 08:44 AM**
Client ID: Run ID: **VMS11_190412B** SeqNo: **5606842** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	20.75	1.0	20	0	104	75-134	0			
Trichloroethene	21.91	1.0	20	0	110	84-130	0			
Surr: 1,2-Dichloroethane-d4	*16.87*	0	*20*	0	*84.4*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*20.16*	0	*20*	0	*101*	*80-110*	0			
Surr: Dibromofluoromethane	*19.75*	0	*20*	0	*98.8*	*85-115*	0			
Surr: Toluene-d8	*19.39*	0	*20*	0	*97*	*85-110*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258492** Instrument ID **VMS11** Method: **SW8260C**

MSD Sample ID: **1904780-01A MSD** Units: **µg/L** Analysis Date: **4/13/2019 08:22 AM**
Client ID: Run ID: **VMS11_190412B** SeqNo: **5606841** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	20.76	1.0	20	0.11	103	75-134	19.74	5.04	30	
Trichloroethene	21.84	1.0	20	0	109	84-130	20.63	5.7	30	
Surr: 1,2-Dichloroethane-d4	*17.13*	0	*20*	0	*85.6*	*75-120*	17.25	*0.698*	*30*	
Surr: 4-Bromofluorobenzene	*20.15*	0	*20*	0	*101*	*80-110*	20.03	*0.597*	*30*	
Surr: Dibromofluoromethane	*20.15*	0	*20*	0	*101*	*85-115*	19.88	*1.35*	*30*	
Surr: Toluene-d8	*18.95*	0	*20*	0	*94.8*	*85-110*	19	*0.264*	*30*	

MSD Sample ID: **1904792-01A MSD** Units: **µg/L** Analysis Date: **4/13/2019 09:06 AM**
Client ID: Run ID: **VMS11_190412B** SeqNo: **5606843** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	20.7	1.0	20	0	104	75-134	20.75	0.241	30	
Trichloroethene	21.63	1.0	20	0	108	84-130	21.91	1.29	30	
Surr: 1,2-Dichloroethane-d4	*16.76*	0	*20*	0	*83.8*	*75-120*	16.87	*0.654*	*30*	
Surr: 4-Bromofluorobenzene	*20.07*	0	*20*	0	*100*	*80-110*	20.16	*0.447*	*30*	
Surr: Dibromofluoromethane	*19.63*	0	*20*	0	*98.2*	*85-115*	19.75	*0.609*	*30*	
Surr: Toluene-d8	*19*	0	*20*	0	*95*	*85-110*	19.39	*2.03*	*30*	

The following samples were analyzed in this batch:

1904634-09A	1904634-12A	1904634-13A
1904634-14A	1904634-15A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258576** Instrument ID **VMS6** Method: **SW8260C**

MBLK Sample ID: **VBLKW1-190416-R258576** Units: **µg/L** Analysis Date: **4/16/2019 01:28 PM**
Client ID: Run ID: **VMS6_190416A** SeqNo: **5609461** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	U	1.0								
1,1,1-Trichloroethane	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1,2-Trichlorotrifluoroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,1-Dichloropropene	U	1.0								
1,2,3-Trichlorobenzene	0.37	1.0								J
1,2,3-Trichloropropane	U	1.0								
1,2,4-Trichlorobenzene	0.41	1.0								J
1,2,4-Trimethylbenzene	U	1.0								
1,2-Dibromo-3-chloropropane	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichlorobenzene	0.17	1.0								J
1,2-Dichloroethane	U	1.0								
1,2-Dichloropropane	U	1.0								
1,3,5-Trichlorobenzene	U	1.0								
1,3,5-Trimethylbenzene	U	1.0								
1,3-Dichlorobenzene	0.21	1.0								J
1,3-Dichloropropane	U	1.0								
1,4-Dichlorobenzene	0.22	1.0								J
2,2-Dichloropropane	U	1.0								
2-Butanone	U	5.0								
2-Chloroethyl vinyl ether	U	1.0								
2-Chlorotoluene	U	1.0								
2-Hexanone	U	5.0								
2-Methylnaphthalene	0.6	5.0								J
4-Chlorotoluene	U	1.0								
4-Isopropyltoluene	U	1.0								
4-Methyl-2-pentanone	U	1.0								
Acetone	U	10								
Acrolein	U	1.0								
Acrylonitrile	U	1.0								
Benzene	U	1.0								
Benzyl chloride	U	1.0								
Bromobenzene	0.15	1.0								J
Bromochloromethane	U	1.0								
Bromodichloromethane	U	1.0								
Bromoform	U	1.0								
Bromomethane	1.43	1.0								
Carbon disulfide	0.4	1.0								J

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258576** Instrument ID **VMS6** Method: **SW8260C**

Carbon tetrachloride	U	1.0						
Chlorobenzene	U	1.0						
Chloroethane	U	1.0						
Chloroform	U	1.0						
Chloromethane	U	1.0						
cis-1,2-Dichloroethene	U	1.0						
cis-1,3-Dichloropropene	U	1.0						
Dibromochloromethane	U	1.0						
Dibromomethane	U	1.0						
Dichlorodifluoromethane	U	1.0						
Ethylbenzene	U	1.0						
Hexachlorobutadiene	0.34	1.0						J
Hexachloroethane	U	1.0						
Hexane	U	1.0						
Iodomethane	2.15	1.0						
Isopropylbenzene	U	1.0						
m,p-Xylene	U	2.0						
Methyl tert-butyl ether	U	1.0						
Methylene chloride	U	5.0						
Naphthalene	0.54	5.0						J
n-Butylbenzene	0.12	1.0						J
n-Propylbenzene	U	1.0						
o-Xylene	U	1.0						
p-Isopropyltoluene	U	1.0						
sec-Butylbenzene	U	1.0						
Styrene	U	1.0						
tert-Butyl alcohol	U	20						
tert-Butylbenzene	U	1.0						
Tetrachloroethene	U	1.0						
Tetrahydrofuran	U	1.0						
Toluene	U	1.0						
trans-1,2-Dichloroethene	U	1.0						
trans-1,3-Dichloropropene	U	1.0						
trans-1,4-Dichloro-2-butene	U	2.0						
Trichloroethene	U	1.0						
Trichlorofluoromethane	U	1.0						
Vinyl acetate	U	5.0						
Vinyl chloride	U	1.0						
Surr: 1,2-Dichloroethane-d4	*20.08*	0	*20*	0	*100*	*75-120*	0	
Surr: 4-Bromofluorobenzene	*19.28*	0	*20*	0	*96.4*	*80-110*	0	
Surr: Dibromofluoromethane	*19.02*	0	*20*	0	*95.1*	*85-115*	0	
Surr: Toluene-d8	*20.29*	0	*20*	0	*101*	*85-110*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258576** Instrument ID **VMS6** Method: **SW8260C**

LCS Sample ID: **VLCSW1-190416-R258576** Units: **µg/L** Analysis Date: **4/16/2019 12:12 PM**
Client ID: Run ID: **VMS6_190416A** SeqNo: **5609460** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.21	1.0	20	0	96	73-114	0			
1,1,1-Trichloroethane	20.42	1.0	20	0	102	75-130	0			
1,1,2,2-Tetrachloroethane	19.96	1.0	20	0	99.8	75-130	0			
1,1,2-Trichloroethane	20.22	1.0	20	0	101	75-125	0			
1,1-Dichloroethane	21.67	1.0	20	0	108	68-142	0			
1,1-Dichloroethene	22.17	1.0	20	0	111	70-145	0			
1,1-Dichloropropene	19	1.0	20	0	95	75-135	0			
1,2,3-Trichlorobenzene	20.71	1.0	20	0	104	70-140	0			
1,2,3-Trichloropropane	19.21	1.0	20	0	96	75-125	0			
1,2,4-Trichlorobenzene	21.39	1.0	20	0	107	70-135	0			
1,2,4-Trimethylbenzene	19.66	1.0	20	0	98.3	75-130	0			
1,2-Dibromo-3-chloropropane	18.06	1.0	20	0	90.3	60-130	0			
1,2-Dibromoethane	21.22	1.0	20	0	106	67-155	0			
1,2-Dichlorobenzene	19.69	1.0	20	0	98.4	70-130	0			
1,2-Dichloroethane	19.58	1.0	20	0	97.9	78-125	0			
1,2-Dichloropropane	19.22	1.0	20	0	96.1	75-125	0			
1,3,5-Trimethylbenzene	19.88	1.0	20	0	99.4	75-130	0			
1,3-Dichlorobenzene	19.42	1.0	20	0	97.1	75-130	0			
1,3-Dichloropropane	20.04	1.0	20	0	100	75-125	0			
1,4-Dichlorobenzene	20.24	1.0	20	0	101	75-130	0			
2,2-Dichloropropane	21.82	1.0	20	0	109	43-150	0			
2-Butanone	20.72	5.0	20	0	104	55-150	0			
2-Chlorotoluene	19.07	1.0	20	0	95.4	76-117	0			
2-Hexanone	19.19	5.0	20	0	96	60-135	0			
4-Chlorotoluene	19.58	1.0	20	0	97.9	80-125	0			
4-Isopropyltoluene	21.07	1.0	20	0	105	61-164	0			
4-Methyl-2-pentanone	27.41	1.0	20	0	137	77-178	0			
Acetone	17.88	10	20	0	89.4	60-160	0			
Acrylonitrile	21.52	1.0	20	0	108	60-140	0			
Benzene	19.96	1.0	20	0	99.8	85-125	0			
Bromobenzene	18.4	1.0	20	0	92	80-125	0			
Bromochloromethane	21.28	1.0	20	0	106	72-141	0			
Bromodichloromethane	20.23	1.0	20	0	101	75-125	0			
Bromoform	15.6	1.0	20	0	78	60-125	0			
Bromomethane	17.53	1.0	20	0	87.6	30-185	0			B
Carbon disulfide	22.49	1.0	20	0	112	60-165	0			
Carbon tetrachloride	19.66	1.0	20	0	98.3	65-140	0			
Chlorobenzene	19.72	1.0	20	0	98.6	80-120	0			
Chloroethane	17.97	1.0	20	0	89.8	31-172	0			
Chloroform	20.43	1.0	20	0	102	80-130	0			
Chloromethane	16.57	1.0	20	0	82.8	46-148	0			
cis-1,2-Dichloroethene	20.21	1.0	20	0	101	75-134	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258576**	Instrument ID **VMS6**		Method: **SW8260C**					
cis-1,3-Dichloropropene	19.7	1.0	20	0	98.5	70-130	0	
Dibromochloromethane	15.54	1.0	20	0	77.7	60-115	0	
Dibromomethane	18.94	1.0	20	0	94.7	79-126	0	
Dichlorodifluoromethane	13.35	1.0	20	0	66.8	20-120	0	
Ethylbenzene	20.07	1.0	20	0	100	76-123	0	
Hexachlorobutadiene	22.13	1.0	20	0	111	70-155	0	
Hexachloroethane	17.04	1.0	20	0	85.2	50-124	0	
Iodomethane	21.99	1.0	20	0	110	60-160	0	B
Isopropylbenzene	19.68	1.0	20	0	98.4	80-127	0	
m,p-Xylene	39.49	2.0	40	0	98.7	75-130	0	
Methyl tert-butyl ether	21.92	1.0	20	0	110	68-129	0	
Methylene chloride	18.38	5.0	20	0	91.9	72-125	0	
Naphthalene	21.74	5.0	20	0	109	55-160	0	
n-Butylbenzene	21.93	1.0	20	0	110	75-145	0	
n-Propylbenzene	19.69	1.0	20	0	98.4	76-116	0	
o-Xylene	17.96	1.0	20	0	89.8	76-127	0	
p-Isopropyltoluene	21.07	1.0	20	0	105	61-164	0	
sec-Butylbenzene	20.56	1.0	20	0	103	80-134	0	
Styrene	18.41	1.0	20	0	92	83-137	0	
tert-Butyl alcohol	102.7	20	100	0	103	70-130	0	
tert-Butylbenzene	19.82	1.0	20	0	99.1	70-130	0	
Tetrachloroethene	19.51	1.0	20	0	97.6	68-166	0	
Tetrahydrofuran	20.48	1.0	20	0	102	54-139	0	
Toluene	19.74	1.0	20	0	98.7	76-125	0	
trans-1,2-Dichloroethene	21.85	1.0	20	0	109	80-140	0	
trans-1,3-Dichloropropene	19.09	1.0	20	0	95.4	56-132	0	
trans-1,4-Dichloro-2-butene	15.9	2.0	20	0	79.5	46-118	0	
Trichloroethene	18.94	1.0	20	0	94.7	84-130	0	
Trichlorofluoromethane	16.85	1.0	20	0	84.2	60-140	0	
Vinyl chloride	17.51	1.0	20	0	87.6	50-136	0	
Surr: 1,2-Dichloroethane-d4	*19.81*	0	*20*	0	*99*	*75-120*	0	
Surr: 4-Bromofluorobenzene	*19.59*	0	*20*	0	*98*	*80-110*	0	
Surr: Dibromofluoromethane	*20.26*	0	*20*	0	*101*	*85-115*	0	
Surr: Toluene-d8	*19.61*	0	*20*	0	*98*	*85-110*	0	

The following samples were analyzed in this batch: 1904634-14A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258375a** Instrument ID **LACHAT2** Method: **E353.2 R2.0**

MBLK Sample ID: **MBLK-R258375a** Units: **mg/L** Analysis Date: **4/12/2019 12:38 PM**
Client ID: Run ID: **LACHAT2_190412A** SeqNo: **5604663** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	U	0.020								

LCS Sample ID: **LCS-R258375a** Units: **mg/L** Analysis Date: **4/12/2019 12:39 PM**
Client ID: Run ID: **LACHAT2_190412A** SeqNo: **5604664** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	5.184	0.020	5	0	104	80-120	0			

MS Sample ID: **1904625-04A MS** Units: **mg/L** Analysis Date: **4/12/2019 12:48 PM**
Client ID: Run ID: **LACHAT2_190412A** SeqNo: **5604671** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	12.7	0.020	5	8.649	81	75-125	0			E

MS Sample ID: **1904634-12C MS** Units: **mg/L** Analysis Date: **4/12/2019 12:54 PM**
Client ID: **COL-GW-12** Run ID: **LACHAT2_190412A** SeqNo: **5604676** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	5.252	0.020	5	-0.006049	105	75-125	0			

MSD Sample ID: **1904625-04A MSD** Units: **mg/L** Analysis Date: **4/12/2019 12:49 PM**
Client ID: Run ID: **LACHAT2_190412A** SeqNo: **5604672** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	12.77	0.020	5	8.649	82.4	75-125	12.7	0.55	20	E

MSD Sample ID: **1904634-12C MSD** Units: **mg/L** Analysis Date: **4/12/2019 12:55 PM**
Client ID: **COL-GW-12** Run ID: **LACHAT2_190412A** SeqNo: **5604677** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate-Nitrite	5.39	0.020	5	-0.006049	108	75-125	5.252	2.59	20	

The following samples were analyzed in this batch:

1904634-05C	1904634-12C	1904634-13C
1904634-14C	1904634-16C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258511** Instrument ID **WETCHEM** Method: **SW9034**

MBLK Sample ID: **MB-R258511-R258511** Units: **mg/L** Analysis Date: **4/15/2019 02:30 PM**
Client ID: Run ID: **WETCHEM_190415N** SeqNo: **5607508** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	U	1.0								

LCS Sample ID: **LCS-R258511-R258511** Units: **mg/L** Analysis Date: **4/15/2019 02:30 PM**
Client ID: Run ID: **WETCHEM_190415N** SeqNo: **5607509** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	8.52	1.0	10.75	0	79.3	56-102	0			

The following samples were analyzed in this batch: 1904634-05D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258534** Instrument ID **IC4** Method: **SW9056A**

MBLK Sample ID: **CCB/MBLK-R258534** Units: **mg/L** Analysis Date: **4/15/2019 11:30 AM**
Client ID: Run ID: **IC4_190415A** SeqNo: **5608057** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	1.0								
Sulfate	U	1.0								

LCS Sample ID: **LCS-R258534** Units: **mg/L** Analysis Date: **4/15/2019 12:34 PM**
Client ID: Run ID: **IC4_190415A** SeqNo: **5608058** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.286	1.0	10	0	92.9	88-110	0			
Sulfate	9.586	1.0	10	0	95.9	90-110	0			

MS Sample ID: **1904634-12B MS** Units: **mg/L** Analysis Date: **4/15/2019 02:44 PM**
Client ID: **COL-GW-12** Run ID: **IC4_190415A** SeqNo: **5608065** Prep Date: DF: **40**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	468.5	40	400	68.14	100	88-110	0			
Sulfate	494	40	400	100.7	98.3	90-110	0			

MSD Sample ID: **1904634-12B MSD** Units: **mg/L** Analysis Date: **4/15/2019 03:00 PM**
Client ID: **COL-GW-12** Run ID: **IC4_190415A** SeqNo: **5608066** Prep Date: DF: **40**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	465.8	40	400	68.14	99.4	88-110	468.5	0.578	20	
Sulfate	487.3	40	400	100.7	96.6	90-110	494	1.36	20	

The following samples were analyzed in this batch:

1904634-05B	1904634-12B	1904634-13B
1904634-14B	1904634-16B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: BB&E, Inc.
Work Order: 1904634
Project: SSW Collis 2019 LTM Task 1

QC BATCH REPORT

Batch ID: **R258587** Instrument ID **WETCHEM** Method: **SW9034**

MBLK Sample ID: **MB-R258587-R258587** Units: **mg/L** Analysis Date: **4/16/2019 02:15 PM**
Client ID: Run ID: **WETCHEM_190416I** SeqNo: **5609896** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	U	1.0								

LCS Sample ID: **LCS-R258587-R258587** Units: **mg/L** Analysis Date: **4/16/2019 02:15 PM**
Client ID: Run ID: **WETCHEM_190416I** SeqNo: **5609897** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	9.96	1.0	10.75	0	92.7	56-102	0			

MS Sample ID: **1904634-12DMS** Units: **mg/L** Analysis Date: **4/16/2019 02:15 PM**
Client ID: **COL-GW-12** Run ID: **WETCHEM_190416I** SeqNo: **5609899** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	9.96	1.0	10.75	0	92.7	56-102	0			

MSD Sample ID: **1904634-12DMSD** Units: **mg/L** Analysis Date: **4/16/2019 02:15 PM**
Client ID: **COL-GW-12** Run ID: **WETCHEM_190416I** SeqNo: **5609900** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	10.08	1.0	10.75	0	93.8	56-102	9.96	1.2	10	

The following samples were analyzed in this batch: 1904634-12D 1904634-13D 1904634-14D 1904634-16D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 2

COC ID: 187223

ALS Project Manager:

ALS Work Order #: 1904634

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	SSW Collis 2018 LTM Task 1	A	VOCs
Work Order		Project Number		B	Chloride, Nitrate+Nitrite, Sulfate
Company Name	BB&E, LLC	Bill To Company	BB&E, LLC	C	Dissolved Iron and Manganese
Send Report To	Kacie Van Buskirk	Invoice Attn	Accounts Payable	D	Sulfide
Address	245 East Main Street Suite 107	Address	245 East Main Street Suite 107	E	Methane, Ethane, Ethene
				F	1,4-Dioxane
City/State/Zip	Northville, MI 48167	City/State/Zip	Northville, MI 48167	G	
Phone	(248) 489-9636	Phone	(248) 489-9636	H	
Fax	(248) 489-9646	Fax	(248) 489-9646	I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	COL-GW-01	4/8/19	0935	GW	1,8	3	X										
2	COL-GW-02	4/8/19	1020	GW	1,8	3	X										
3	COL-GW-03	4/8/19	1100	GW	1,8	3	X										
4	COL-GW-04	4/8/19	1210	GW	1,8	6	X					X					
5	COL-GW-05	4/8/19	1300	GW	1,8	12	X	X	X	X	X	X					
6	COL-GW-06	4/8/19	1355	GW	1,8	3	X										
7	COL-GW-07	4/8/19	1355	GW	1,8	3	X										
8	COL-GW-08	4/8/19	1455	GW	1,8	3	X										
9	COL-GW-09	4/8/19	1540	GW	1,8	3	X										
10	COL-GW-10	4/9/19	0830	GW	1,8	3	X										

Sampler(s) Please Print & Sign: Kacie Van Buskirk

Shipment Method: FedEx

Required Turnaround Time: (Check Box) [X] Std 10 WK Days [ ] 5 WK Days [ ] Other ____ [ ] 2 WK Days [ ] 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Relinquished by: FedEx	Date: 4/10/19	Time: 0800	Received by (Laboratory):
Logged by (Laboratory): KRW	Date: 4/10/19	Time: 1030	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp.
SR	2.8°C
PMS	

QC Package: (Check One Box Below)
- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [ ] TRRP CheckList
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

Chain of Custody Form

Page 2 of 2

COC ID: 187222

ALS Project Manager:

ALS Work Order #: 1904634

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	SSW Collis 2018 LTM Task 1	A	VOCs
Work Order		Project Number		B	Chloride, Nitrate+Nitrite, Sulfate
Company Name	BB&E, LLC	Bill To Company	BB&E, LLC	C	Dissolved Iron and Manganese - Not field filtered
Send Report To	Kacie Van Buskirk	Invoice Attn	Accounts Payable	D	Sulfide
Address	235 East Main Street Suite 107	Address	235 East Main Street Suite 107	E	Methane, Ethane, Ethene
				F	1,4-Dioxane
City/State/Zip	Northville, MI 48167	City/State/Zip	Northville, MI 48167	G	
Phone	(248) 489-9636	Phone	(248) 489-9636	H	
Fax	(248) 489-9646	Fax	(248) 489-9646	I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	COL-GW-11	4/9/19	0915	GW	1,8	3	X										
2	COL-GW-12	4/9/19	1000	GW	1,8,7	12	X	X	X	X	X	X					
3	COL-GW-12 MS/MSD	4/9/19	1000	GW	1,8,7	24	X	X	X	X	X	X					
4	COL-GW-13	4/9/19	1000	GW	1,8,7	12	X	X	X	X	X	X					
5	COL-GW-14	4/9/19	1125	GW	1,8,7	12	X	X	X	X	X	X					
6	COL-GW-15	4/9/19	1220	GW	1,8	3	X										
7	EB	4/9/19	1230	GW	1,8,7	12	X	X	X	X	X	X					
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Kacie VanBuskirk

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☒ Std 10 WK Days ☐ 5 WK Days ☐ Other ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Relinquished by: FedEx	Date: 4/10/19	Time: 0800	Received by (Laboratory):
Logged by (Laboratory): Kev	Date: 4/10/19	Time: 1030	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Group, USA

Sample Receipt Checklist

Client Name: **BBE** Date/Time Received: **10-Apr-19 08:00**

Work Order: **1904634** Received by: **KRW**

Checklist completed by *Keith Wierenga* eSignature 10-Apr-19 Date Reviewed by: *Chad Whelton* eSignature 10-Apr-19 Date

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.8/2.8 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	4/10/2019 11:15:23 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ATTACHMENT B

FIELD NOTES

Equipment Calibration Daily Log

BB&E

Date:	4/8/19	Project Name:	LTM SA1 2019
Project#:	02028025 Task 1	Recorded by:	KVB

WATER QUALITY METER	Model: YSI 556 MPS Equipment ID#: R8527				Morning Calibration/ Check	Evening Check (one point only)	Additional Calib/Check (if needed)
	Parameter	Standard	Exp Date	Lot#	Time: 0715	Time: 1615	Time:
First Point Calibration (Auto)	pH	7.0	12/31/20	BGL 101	Initials: 6.99	Value: 6.96	
	Turbidity (NTU)	<0.1	05/2020	3755	0.1	Value: 0.12	
	Conductivity (mS/cm)	1.413	10/10/19	13410	1.414	Value: 1.416	
	ORP (mV)	240.0	12/31/23	3086	240	Value: 240.7	
	DO (mg/L)	8.9-9. (ambient air)	NA	NA	8.91	Value: 8.91	
Second Point Calibration	pH	4.0	12/31/20	BGL 214	Initials: 4.01	Value: 4.05	
	Turbidity (NTU)	100	11/19	3771	100	Value: 101	
	~~Conductivity (mS/cm)~~					Value:	
Third Point Calibration	pH	10.0	12/31/20	BGL 108	Initials: 10.0	Value: 10.12	
	Turbidity	750	12/19	3793	750	Value: 752	

Turbidity Meter Model and Equipment ID: Hanna HI 98703

Additional Remarks: _____

Equipment Calibration Daily Log

BB&E

Date:	4/9/19	Project Name:	LTM SA1 2019
Project#:	02028025 Task 1	Recorded by:	KVB

WATER QUALITY METER	Model: YSI 556 MPS Equipment ID#: R 8527				Morning Calibration/ Check	Evening Check (one point only)	Additional Calib/Check (if needed)
	Parameter	Standard	Exp Date	Lot#	Time: 0710	Time: 1300	Time:
First Point Calibration (Auto)	pH	7.0	12/31/20	BGL 701	Initials: 7.0	Value: 6.96	
	Turbidity (NTU)	<0.1	5/2020	3755	<0.1	Value: <0.1	
	Conductivity (mS/cm)	1.413	10/10/19	13410	1.414	Value: 1.417	
	ORP	240.0	12/31/23	30860	240	Value: 241.2	
	DO (mg/L)	8.9-9. (ambient air)	NA	NA	8.91	Value: 8.91	
Second Point Calibration	pH	4.0	12/31/20	BGL 214	Initials: 4.0	Value: 4.00	
	Turbidity (NTU)	100	11/19	3771	100	Value: 101.1	
	~~Conductivity (mS/cm)~~					Value:	
Third Point Calibration	pH	10.0	12/31/20	BGL 108	Initials: 10.03	Value: 10.09	
	Turbidity	750	12/19	3793	750.9	Value: 753	

Turbidity Meter Model and Equipment ID:

Additional Remarks: _____

MONITOR WELL STATIC WATER LEVEL FORM

Project Name: LTM SA 1 2019 **DATE:** 4/ 8 /19
Water Level Indicator ID # 200904 **Field Book #** 353
LOCATION: SSW Collis, Clinton Iowa **Page #** 1 **of** 1

Monitor Well Number	Total Well Depth	Well Screen Length	Time	Depth to Static Water Level
MW-38	9.95	5 ft	0805	3.79
MW-39	13.91	5 ft	0800	3.61
MW-50S	12.28	5 ft	0820	3.20
PZ-47	10.89	10 ft	0855	1.95
PZ-48	10.65	10 ft	0850	3.20
MW-34	31.6	5 ft	0875	5.12
MW-45	25.59	5 ft	0835	0.0
MW-47S	17.93	5 ft	0900	1.68
MW-50	24.77	5 ft	0815	3.10
MW-56	30	5 ft	0845	1.58
MW-42	50.2	5 ft	0830	4.50
MW-53	52.24	5 ft	0840	0.0
MW-43	99.38	5 ft	0810	0.0

Note: total well depth to be measured at time of gauging.
Comments: _____
Sampler___ KVB_____ Observer _____

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Welll ID: MW-475	Date: 4/8/19
	Project #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW-01	Recorded by: KVB
	Weather Conditions & Barometric Pressure: 50°F, Sun, 30.02 in Hg		

EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 2009404	PID Type/ID#: NA
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder	Turbidimeter and #: Hanna HI 98703

WELL INFO	Casing ID (in): 2in	Well Volume: ~2.6 gal	Condition of Well: Good
	Initial Depth to Water (ft): 1.68	Total Volume Purged: ~2 gal	Water in Well Vault? NO
	Total Well Depth (ft): 17.93	Depth of Pump Intake (ft): Lift from bottom	Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 16.25	Immiscible Layer: Yes (NO)	Ambient PID (ppm): NA
	Remarks:		

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	~~2.0~~	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	0.16	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/8/19 ~~4/8/19~~	0900	1.72	NA	300	9.86	6.60	0.548	5.87	7.73	-47.3	Clear, No odor
	0905	1.77	NA	300	9.44	6.19	0.537	3.66	5.65	-48.4	
	0910	1.80	NA	300	9.36	6.22	0.535	3.46	5.78	-54.1	
	0915	1.81	NA	300	9.26	6.29	0.533	2.46	5.23	-49.9	
	0920	1.82	NA	300	9.18	6.32	0.532	2.00	5.16	-55.6	
	0925	1.82	NA	300	9.15	6.33	0.531	1.71	5.01	-60.4	
	0930	1.82	NA	300	9.18	6.50	0.531	1.74	4.67	-62.4	
	0935	1.82	NA	300	9.19	6.51	0.532	1.70	4.70	-64.2	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 0935 4/8/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187223	(3)	40mL	VOA	HCl	N	Pump			VOCs
	3	40mL	VOA	HCl	N	Pump			~~1,4-Dioxane~~
	2	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
ALS	1	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	1	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	1	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Welll ID: PZ-47	Date: 4/8 /19
	Project: #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW- 02	Recorded by: KVB
	Weather Conditions & Barometric Pressure: 60°F Sun 30.02 InHg		

EQUIPMENT	Purging Equipment: Peristaltic	Water Level Indicator: Solinst 200904	PID Type/ID#: NA
	Water Quality Meter Type and #: YSI	Sampling Equipment: peristaltic	Turbidimeter and #: Himmuti 98703

WELL INFO	Casing ID (in): 1in	Well Volume: 0.36 gal	Condition of Well: Good
	Initial Depth to Water (ft): 1.95	Total Volume Purged: ~1gal	Water in Well Vault? NO
	Total Well Depth (ft): 10.89	Depth of Pump Intake (ft): 4Ft from bottom	Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 8.94	Immiscible Layer: Yes (No)	Ambient PID (ppm): NA
	Remarks:		

CASING INFO											
	Casing ID (in) [a]:	(1)	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0
	Unit Casing Volume (gal/lin ft) [b]:	(0.04)	0.09	0.16	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/8/19 ~~10/ /18~~	0950	1.98	NA	250	8.22	6.33	0.739	6.30	101	-26.3	Clear, No odor
	0955	2.01	NA	250	7.69	6.15	0.711	3.64	33.1	-19.2	
	1000	2.04	NA	250	7.57	6.18	0.692	3.76	30.6	-1.6	
	1005	2.07	NA	250	7.18	6.20	0.664	3.24	22.7	12.5	
	1010	2.07	NA	250	7.13	6.23	0.656	2.90	12.0	23.0	
	1015	2.07	NA	250	7.16	6.25	0.647	2.95	7.8	25.7	
	1020	2.08	NA	250	7.17	6.26	0.644	2.97	7.6	24.8	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1020 4/8/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187223	(3)	40mL	VOA	HCl	N	Pump			VOCs
	3	40mL	VOA	HCl	N	Pump			1,4-Dioxane
	2	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
ALS	1	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	1	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	1	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Well ID: PZ-48	Date: 4/8/19
	Project #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW- 03	Recorded by: KVB
	Weather Conditions & Barometric Pressure: 60° Sun 30.02 inHg		

EQUIPMENT	Purging Equipment: peristaltic	Water Level Indicator: Solinst 200904	PID Type/ID#: NA
	Water Quality Meter Type and #: YSI	Sampling Equipment: peristaltic	Turbidimeter and #: Hanna Hi 98703

WELL INFO	Casing ID (in): 1.0	Well Volume: ~0.3 gal	Condition of Well: Good
	Initial Depth to Water (ft): 3.20	Total Volume Purged: 1.5 gal	Water in Well Vault? NO
	Total Well Depth (ft): 10.65	Depth of Pump Intake (ft): 4 ft From bottom	Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 7.45	Immiscible Layer: Yes (No)	Ambient PID (ppm): NA
	Remarks:		

CASING INFO											
Casing ID (in) [a]:	(1.0)	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	(0.04)	0.09	0.16	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/8/19 ~~10/ /18~~	1035	3.30	NA	200	6.35	7.12	0.491	6.44	115	1.8	Clear; No odor
	1040	3.35	NA	200	5.52	6.47	0.466	5.70	103	20.9	
	1045	3.37	NA	200	4.96	6.32	0.454	4.09	128	43.3	
	1050	3.41	NA	200	5.69	6.44	0.458	4.16	55.5	50.0	
	1055	3.43	NA	200	5.74	6.48	0.459	4.21	33.8	51.5	
	1100	3.46	NA	200	5.70	6.49	0.458	4.20	26.6	52.0	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1100 4/8/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187223	(3)	40mL	VOA	HCl	N	Pump			VOCs
	3	40mL	VOA	HCl	N	Pump			1,4-Dioxane
	2	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
ALS	1	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	1	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	1	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Well ID: MW -45	Date: 4/8 /19
	Project: #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW- 04	Recorded by: KVB
	Weather Conditions & Barometric Pressure: 60°F, Sun, 30.02 inHg		

EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 200904	PID Type/ID#: NA
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder	Turbidimeter and #: Hanna HI 98703

WELL INFO	Casing ID (in): 2in	Well Volume: ~4.08 gal	Condition of Well: Good
	Initial Depth to Water (ft): 6.0	Total Volume Purged: ~2.5 gal	Water in Well Vault? No
	Total Well Depth (ft): 25.5	Depth of Pump Intake (ft): 4 ft from bottom	Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 25.5	Immiscible Layer: Yes (No)	Ambient PID (ppm): NA
	Remarks:		

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	(0.16)	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/8/19 10~~/18~~	1150	0.0	na	300	11.77	6.90	0.~~674~~ ~~57.5~~	7.83	64.3	87.1	clear, no odor
	1155	0.0	na	300	11.57	6.86	0.672	4.90	29.5	80.9	
	1200	0.0	na	300	11.43	6.84	0.670	3.29	17.8	75.9	
	1205	0.0	na	300	11.47	6.87	0.670	3.20	12.6	73.2	
	1210	0.0	na	300	11.52	6.88	0.671	3.05	10.6	71.9	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings
Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1210 4/8/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187223	(3)	40mL	VOA	HCl	N	Pump			VOCs
	(3)	40mL	VOA	HCl	N	Pump			1,4-Dioxane
	2	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
ALS	1	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	1	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	1	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Welll ID: MW-53		Date: 4/8/19	
	Project: #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW-05		Recorded by: KVB	
	Weather Conditions & Barometric Pressure:				
EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 200904		PID Type/ID#: NA	
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder		Turbidimeter and #: Hanna HI 98703	
WELL INFO	Casing ID (in): 2;n	Well Volume: ~8.35 gal		Condition of Well: Good	
	Initial Depth to Water (ft): 0.0	Total Volume Purged: ~2.5 gal		Water in Well Vault? NO	
	Total Well Depth (ft): 52.24	Depth of Pump Intake (ft): 44ft from bottom		Well Mouth PID (ppm): NA	
	Water Column Thickness (ft): 52.24	Immiscible Layer: Yes (No)		Ambient PID (ppm): NA	
	Remarks:				

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	(0.16)	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/18/19 ~~4/8/19~~	1240	0.0	na	250	12.29	7.15	0.616	8.27	5.47	-41.3	Clear; No odor
	1245	0.0	na	250	12.08	7.04	0.599	4.18	3.77	-42.7	
	1250	0.0	na	250	12.10	7.05	0.597	3.84	2.99	-45.3	
	1255	0.0	na	250	12.12	7.06	0.596	3.80	2.11	-47.0	
	1300	0.0	na	250	12.19	7.06	0.596	3.71	2.06	-46.7	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings
Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1300 4/8/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187223	(3)	40mL	VOA	HCl	N	Pump			VOCs
	(3)	40mL	VOA	HCl	N	Pump			1,4-Dioxane
	(2)	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
ALS	(1)	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	(1)	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	(1)	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Well ID: MW-54	Date: 4/8/19
	Project: #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW-04	Recorded by: KVB
	Weather Conditions & Barometric Pressure: 70°F, sun, 30.02 in Hg		

EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 200904	PID Type/ID#: NA
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder	Turbidimeter and #: Hanna MI 98703

WELL INFO	Casing ID (in): 2 in	Well Volume: ~4.5 gal	Condition of Well:
	Initial Depth to Water (ft): 1.58	Total Volume Purged: ~7.5 gal	Water in Well Vault?
	Total Well Depth (ft): 30	Depth of Pump Intake (ft): 4ft from bottom	Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 28.42	Immiscible Layer: Yes (No)	Ambient PID (ppm): NA
	Remarks:		

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	0.16	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/8/19 ~~4/8/18~~	1335	1.66	na	250	13.68	7.28	0.590	14.4	70.9	-57.8	Clear, no odor
	1340	1.71	na	250	10.56	6.70	0.527	11.30	51.6	-36.4	
	1345	1.71	na	250	10.13	6.66	0.517	10.3	21.6	-37.7	
	1350	1.72	na	250	9.84	6.66	0.513	10.1	20.7	-38.6	
	1355	1.77	na	250	9.86	6.67	0.512	10.01	16.7	-30.0	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1355 4/8/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187223	(3)	40mL	VOA	HCl	N	Pump	(3)		VOCs
	~~3~~	40mL	VOA	HCl	N	Pump	—		1,4-Dioxane
ALS	~~2~~	40mL	VOA	HCl	N	Pump	—		Methane, Ethane, Ethene (MNAs)
	~~1~~	250mL	Plastic	H2SO4	N	Pump	—		Nitrite/Nitrate (MNAs)
	~~1~~	500mL	Plastic		N	Pump	—		Chloride, Sulfate, Metals (MNAs)
	~~1~~	500mL	Plastic	ZnAc	N	Pump	—		Sulfide (MNAs)

* Collect ~~MW-C~~ COL-GW-07 for VOCs Duplicate

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Welll ID: MW-43	Date: 4/8/19
	Project: #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW- 08	Recorded by: KVB
	Weather Conditions & Barometric Pressure: 70°F, sun, 30.02 in Hg		

EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 200904	PID Type/ID#: NA
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder	Turbidimeter and #: Hanna HI 98703

WELL INFO	Casing ID (in): 2in	Well Volume: ~15.9	Condition of Well: Good
	Initial Depth to Water (ft): 0.0	Total Volume Purged: ~2.5 gal	Water in Well Vault? NO
	Total Well Depth (ft): 99.38	Depth of Pump Intake (ft): 4 ft from bottom	Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 99.38	Immiscible Layer: Yes (No)	Ambient PID (ppm): NA
	Remarks:		

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	(0.16)	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/8/19 ~~4/8/19~~	1430	0.0	na	250	15.14	7.55	0.581	5.10	8.87	-42.4	Clear, NO odor
	1435	0.0	na	250	14.77	7.29	0.572	1.57	2.62	-57.2	
	1440	0.0	na	250	14.77	7.34	0.578	0.90	1.72	-64.0	
	1445	0.0	na	250	14.66	7.35	0.577	0.76	1.66	-62.5	
	1450	0.0	na	250	14.63	7.34	0.574	0.77	1.58	-60.2	
	1455	0.0	na	250	14.57	7.35	0.570	0.70	1.54	-60.3	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1455 4/8/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187223	(3)	40mL	VOA	HCl	N	Pump			VOCs
	~~3~~	40mL	VOA	HCl	N	Pump			1,4-Dioxane
	~~2~~	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
ALS	~~1~~	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	~~1~~	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	~~1~~	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Well ID: MW-38	Date: 4/8/19
	Project #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW-09	Recorded by: KVB
	Weather Conditions & Barometric Pressure: 70°F, Sun, 30.02 in Hg		

EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 200904	PID Type/ID#: NA
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder	Turbidimeter and #: Hanna HI 98703

WELL INFO	Casing ID (in): 2in	Well Volume: ~1gal	Condition of Well: Good
	Initial Depth to Water (ft): 3.74	Total Volume Purged: ~2gal	Water in Well Vault? NO
	Total Well Depth (ft): 9.95	Depth of Pump Intake (ft): 4ft from bottom	Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 6.16	Immiscible Layer: Yes (No)	Ambient PID (ppm): NA
	Remarks:		

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	(0.16)	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/8/19 ~~10/18~~	1510	3.86	na	200	9.64	6.95	1,216	6.61	5.72	44.3	Clear, No odor
	1515	3.89	na	200	9.32	6.73	1.204	6.72	5.16	55.0	
	1520	3.91	na	200	9.20	6.72	1,190	~~6.72~~ 2.09	4.01	53.6	
	1525	3.91	na	200	9.14	6.71	1.186	1.71	3.67	41.3	
	1530	3.92	na	200	9.13	6.70	1.180	1.65	3.32	23.6	
	1535	3.92	na	200	9.10	6.69	1.178	1.70	3.46	20.7	
	1540	3.92	na	200	9.11	6.70	1.176	1.70	3.01	21.8	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1540 4/8/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187223	(3)	40mL	VOA	HCl	N	Pump			VOCs
	~~3~~	40mL	VOA	HCl	N	Pump			1,4-Dioxane
ALS	~~2~~	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
	~~1~~	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	~~1~~	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	~~1~~	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Welll ID: MW-50	Date: 4/9/19
	Project: #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW-10	Recorded by: KVB
	Weather Conditions & Barometric Pressure: 50°F Sun, 30.02 in Hg		

EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 200904	PID Type/ID#: NA
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder	Turbidimeter and #: Hanna MI 98703

WELL INFO	Casing ID (in): 2in	Well Volume: ~3.46 gal	Condition of Well: Good
	Initial Depth to Water (ft): 3.10	Total Volume Purged: ~2.5 gal	Water in Well Vault? No
	Total Well Depth (ft): 24.77	Depth of Pump Intake (ft): 24 ft from bottom	Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 21.67	Immiscible Layer: Yes (No)	Ambient PID (ppm): NA
	Remarks:		

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	(0.16)	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/9/19 ~~10/ /18~~	0750	3.12	na	200	11.40	7.40	0.502	6.45	44.7	120.2	Clear; No odor
	0755	3.14	na	200	11.81	7.10	0.510	2.88	38.1	107.7	
	0800	3.14	na	200	12.09	7.02	0.549	2.18	26.4	97.2	
	0805	3.15	na	200	12.33	6.85	1.396	1.70	20.7	35.9	
	0810	3.15	na	200	12.55	6.89	1.794	1.41	7.75	-21.2	
	0815	3.16	na	200	12.52	6.89	1.929	1.21	6.89	-37.5	
	0820	3.16	na	200	12.53	6.89	1.969	1.15	5.66	-34.7	
	0825	3.16	na	200	12.56	6.89	1.992	1.10	5.66	-35.6	
	0830	3.16	na	200	12.59	6.89	1.990	0.99	4.62	-36.1	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 0830 4/9/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187223	(3)	40mL	VOA	HCl	N	Pump			VOCs
	~~3~~	40mL	VOA	HCl	N	Pump			1,4-Dioxane
ALS	~~2~~	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
	~~1~~	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	~~1~~	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	~~1~~	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Well ID: MW-505	Date: 4/9/19
	Project: #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW-11	Recorded by: KVB
	Weather Conditions & Barometric Pressure: 70°F, Sun, 30.02 in Hg		

EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 200904	PID Type/ID#: NA
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder	Turbidimeter and #: Manna HI 98703

WELL INFO	Casing ID (in): 2in	Well Volume: 1.45gal	Condition of Well: Good
	Initial Depth to Water (ft): 3.20	Total Volume Purged: ~2gal	Water in Well Vault? NO
	Total Well Depth (ft): 12.28	Depth of Pump Intake (ft): 4ft from bottom	Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 9.08	Immiscible Layer: Yes (No?)	Ambient PID (ppm): NA
	Remarks:		

CASING INFO											
	Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
	Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	0.16	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/9/19 ~~10/118~~	0845	3.25	na	200	10.52	7.00	0.886	6.07	8.01	35.9	Clear; NO odor
	0850	3.28	na	200	10.19	6.81	0.853	2.87	7.16	46.3	
	0855	3.30	na	200	10.03	6.81	0.844	2.31	6.11	46.5	
	0900	3.31	na	200	10.58	6.80	1.284	1.76	5.59	2.6	
	0905	3.32	na	200	10.67	6.84	1.305	1.51	4.98	-8.5	
	0910	3.32	na	200	10.69	6.87	1.303	1.46	4.67	-11.1	
	0915	3.32	na	200	10.666	6.88	1.307	1.40	4.72	-12.8	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 0915 4/9/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187272	(3)	40mL	VOA	HCl	N	Pump			VOCs
	~~3~~	40mL	VOA	HCl	N	Pump			1,4-Dioxane
	~~2~~	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
ALS	~~1~~	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	~~1~~	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	1	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis		Well ID: MW-42		Date: 4/9/19
	Project: #: LTM SA2 2018 SSW Collis		Sample ID: COL-GW-12		Recorded by: KVB
	Weather Conditions & Barometric Pressure: 76°F, Sunny 30.02 inHg				
EQUIPMENT	Purging Equipment: Peristaltic		Water Level Indicator: Solinst 100904		PID Type/ID#: NA
	Water Quality Meter Type and #: YSI		Sampling Equipment: Peristaltic		Turbidimeter and #: Hanna HI 98703
WELL INFO	Casing ID (in): 2in		Well Volume: ~7.312 gal		Condition of Well: Good
	Initial Depth to Water (ft): 4.50		Total Volume Purged: ~2 gal		Water in Well Vault? NO
	Total Well Depth (ft): 50.2		Depth of Pump Intake (ft): 46 ft from bottom		Well Mouth PID (ppm): NA
	Water Column Thickness (ft): 45.7		Immiscible Layer: Yes (No)		Ambient PID (ppm): NA
	Remarks:				

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	(0.16)	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/9/19 ~~10/ /18~~	0935	4.52	na	200	12.84	7.49	0.870	34.54	2.87	-6.4	Clear; No odor
	0940	4.54	na	200	12.88	7.06	0.876	10.37	1.96	-8.0	
	0945	4.56	na	200	12.95	7.07	0.875	6.17	1.87	-14.7	
	0950	4.54	na	200	13.02	7.05	0.882	4.58	1.60	-14.7	
	0955	4.54	na	200	13.10	7.02	0.881	2.65	1.57	-13.4	
	1000	4.54	na	200	13.11	7.03	0.883	2.59	1.36	-10.4	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1000 4/9/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187222	(3)	40mL	VOA	HCl	N	Pump	(3)	(2)	VOCs
	(3)	40mL	VOA	HCl	N	Pump	(3)	(2)	1,4-Dioxane
ALS	(2)	40mL	VOA	HCl	N	Pump	(3)	(2)	Methane, Ethane, Ethene (MNAs)
	(1)	250mL	Plastic	H2SO4	N	Pump	(1)	(1)	Nitrite/Nitrate (MNAs)
	(1)	500mL	Plastic		N	Pump	(1)	(1)	Chloride, Sulfate, Metals (MNAs)
	(1)	500mL	Plastic	ZnAc	N	Pump	(1)	(1)	Sulfide (MNAs)

* collect Duplicate COL-GW-13 and COL-GW-12 MS/MSD

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Well ID: MW-34		Date: 4/9/19	
	Project: #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW- 14		Recorded by: KVB	
	Weather Conditions & Barometric Pressure: 70°F, Sun, 30.02 inHg				
EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 200904		PID Type/ID#: NA	
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder		Turbidimeter and #: Hanna HI 98703	
WELL INFO	Casing ID (in): 2in	Well Volume: ~4.2 gal		Condition of Well: Good	
	Initial Depth to Water (ft): 5.12	Total Volume Purged: ~2.5 gal		Water in Well Vault? NO	
	Total Well Depth (ft): 31.6	Depth of Pump Intake (ft): 4ft from bottom		Well Mouth PID (ppm): NA	
	Water Column Thickness (ft): 26.48	Immiscible Layer: Yes (No)		Ambient PID (ppm): NA	
	Remarks:				

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	(0.16)	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/9/19 ~~4/9/18~~	1105	5.14	na	300	11.28	7.00	0.866	12.74	2.76	52.3	clear, no odor
	1110	5.14	na	300	11.41	6.89	0.867	16.52	1.68	59.7	
	1115	5.14	na	300	11.53	6.91	0.869	2.96	1.55	58.1	
	1120	5.14	na	300	11.70	6.89	0.872	1.78	1.26	57.3	
	1125	5.14	na	300	11.71	6.90	0.875	1.59	1.37	51.6	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1125 4/9/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 87722	(3)	40mL	VOA	HCl	N	Pump			VOCs
	(3)	40mL	VOA	HCl	N	Pump			1,4-Dioxane
ALS	(2)	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
	(1)	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	(1)	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	(1)	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

Monitoring Well Sample Collection Form

BB&E

LOCATION	Site: SSW Collis	Well ID: MW-39		Date: 4/9/19	
	Project #: LTM SA2 2018 SSW Collis	Sample ID: COL-GW-15		Recorded by: KVB	
	Weather Conditions & Barometric Pressure: 70°F, Sun, 30.02 inHg				
EQUIPMENT	Purging Equipment: Bladder	Water Level Indicator: Solinst 200904		PID Type/ID#: NA	
	Water Quality Meter Type and #: YSI	Sampling Equipment: Bladder		Turbidimeter and #: Hanna HI 98703	
WELL INFO	Casing ID (in): 2in	Well Volume: 1.73 gal		Condition of Well: Good	
	Initial Depth to Water (ft): 3.61	Total Volume Purged: ~2 gal		Water in Well Vault? NO	
	Total Well Depth (ft): 13.91	Depth of Pump Intake (ft): 4ft from bottom		Well Mouth PID (ppm): NA	
	Water Column Thickness (ft): 10.81	Immiscible Layer: Yes (No)		Ambient PID (ppm): NA	
	Remarks:				

CASING INFO											
Casing ID (in) [a]:	1.0	1.5	(2.0)	2.2	3.0	4.0	4.3	5.0	6.0	7.0
Unit Casing Volume (gal/lin ft) [b]:	0.04	0.09	0.16	0.20	0.37	0.65	0.75	1.0	1.5	2.0

Date	Time (24 hr)	Water Level (FTOC)	Volume Removed (L)	Pumping Rate (Lpm)	Temp (C)	pH	Cond (mS/cm)	DO (mg/L)	Turb (NTU)	ORP (mv)	Remarks (odor, clarity, etc)
4/9/19 ~~10/18~~	1200	3.62	na	200	13.31	6.69	1.954	4.24	3.40	-13.3	Clear, no odor
	1205	3.65	na	200	13.38	6.58	1.960	1.19	2.77	-12.1	
	1210	3.65	no	200	13.40	6.59	1.967	0.81	1.62	-14.8	
	1215	3.65	na	200	13.50	6.60	1.971	0.70	0.90	-16.3	
	1220	3.65	no	200	13.52	6.60	1.965	6.63	0.92	-17.2	

Pump Rate: <=0.5 L/min Drawdown: <0.33 ft Measurements: 5 mins Stabilization for 3 consecutive readings

Stabilization: +/-0.5C, +/-0.1 pH, +/-3% Cond, +/- 0.3 mg/L DO, +/-10% Tub (or < 50 NTU), +/- 10 mV ORP

Sample Date/Time: 1220 4/9/19	# of Containers	Container Volume	Container Material	Preservative	Filter (Y/N)	Pump, Bailer, Foot Valve	Duplicate (# of Containers)	MS/MSD (# of Containers)	Parameter(s) and Analytical Method
Laboratory and Chain-of-Custody #: 187222	~~3~~	40mL	VOA	HCl	N	Pump			VOCs
	~~3~~	40mL	VOA	HCl	N	Pump			1,4-Dioxane
	~~2~~	40mL	VOA	HCl	N	Pump			Methane, Ethane, Ethene (MNAs)
ALS	~~1~~	250mL	Plastic	H2SO4	N	Pump			Nitrite/Nitrate (MNAs)
	~~1~~	500mL	Plastic		N	Pump			Chloride, Sulfate, Metals (MNAs)
	~~1~~	500mL	Plastic	ZnAc	N	Pump			Sulfide (MNAs)

4/8/19 SAI 2019 LTM Monitoring

0700	KVB onsite
0715	Pick up equipment and cal check equipment
0800	Start water level measurements
0900	Commence purge @ MW-47S
0935	Sample MW-47S (COL-GW-01) for VOCs
0950	Commence Purge @ PZ-47
1020	Sample PZ-47 for VOCs (COL-GW-02)
1035	Commence Purge @ PZ-48
1100	Sample PZ-48 (COL-GW-03) for VOCs
1130	Dump ~5 gal purge water @ SSW WWTP
1150	Commence purge @ MW-45
1210	Sample MW-45 (COL-GW-04) for VOCs, 1,4-Dioxane
1240	Commence purge @ MW-53
1300	Sample MW-53 (COL-GW-05) for VOC, gases, 1,4-dioxane, MNA
1335	Commence purge @ MW-56
1355	Sample MW-56 for VOCs (COL-GW-06) and duplicate (COL-GW-07) ~~for~~ VOCs
1430	Commence Purge @ MW-43
1455	Sample MW-43 (COL-GW-08) for VOCs
1510	Commence purge @ MW-38
1540	Sample MW-38 for VOCs (COL-GW-09)
1600	dump ~ 10 gal purge water @ SSW WWTP
1615	Cal check equipment and pack up
1700	KVB offsite

4/8/19

9/19 SAI 2019 LTM Day 2

00 KVB onsite
10 Cal check equipment
30 Commence purge @ MW-30
830 Sample MW-30 (COL-GW-10) for VOCs
845 Commence purge @ MW-30S
915 Sample MW-30S for VOCs (COL-GW-11)
Commence purge @ MW-42
00 Sample MW-42 (COL-GW-12) and COL-GW-12MS/MSD and Duplicate COL-GW-13 for VOCs, 1,4-dioxane, MNA
05 Commence purge @ MW-34
25 Sample MW-34 (COL-GW-14) for VOCs, 1,4-dioxane, MNA
140 Dump ~10 gal purge water @ WWTP
200 Commence purge @ MW-39
220 Sample MW-39 (COL-GW-15) for VOCs
230 Collect Equipment blank (EB) from Bladder pump for VOCs, 1,4-dioxane, MNAs.
300 Pack up equipment | cal check
500 KVB offsite
600 Ship cooler/Equipment

9/19/19

ATTACHMENT C

GRAVEL LOT INSPECTION

SEMI-ANNUAL INSPECTION RECORD
Media Management Plan
Collis, Inc. Property
Clinton, Iowa

Inspection performed by: KVB

Date: 4/9/19

Weather: 75° Sun

1) **Gravel Truck Lot**

See attached figure for area to be inspected. Inspect gravel condition and list observations below. Take photographs showing overall condition of the lot and gravel coverage, including close-up photographs detailing specific observations.

1) Inspect for evidence of excessive erosion. If excessive erosion is observed, document necessary corrective measures (e.g., regrading, placement of new gravel, etc.).

No evidence of excessive erosion

2) Inspect for evidence of burrowing animals. If evidence of burrowing animals observed, document necessary corrective measures (e.g., filling of burrow holes, etc.).

No evidence of burrowing animals

3) Inspect for areas of poor drainage or ponding. If evidence of poor drainage or ponding are observed, document necessary corrective measures (e.g., regrading, placement of new gravel, etc.).

No areas of poor drainage or ponding

4) Inspect for bare areas (either no gravel cover or no vegetation). If bare areas are observed, document necessary corrective measures (e.g., placement of new gravel).

No bare areas

Additional/Other Maintenance needed? Yes____ No X

Location/explanation:

Corrective measures must be completed within **60 days** of discovery (weather permitting) and documented evidence of corrective measures implementation must be provided to BB&E as part of the certification process.

Follow-up Inspection (after repair):

Performed by: _____

Date: _____

Attachment C
Gravel Lot Inspection
April 2019

Photo 1

Photo 2

Attachment C
Gravel Lot Inspection
April 2019

Photo 3

Photo 4

Attachment C
Gravel Lot Inspection
April 2019

Photo 5

Photo 6

Attachment C
Gravel Lot Inspection
April 2019

Photo 7

Photo 8

Attachment C
Gravel Lot Inspection
April 2019

Photo 9

ATTACHMENT D

COST ESTIMATE REVIEW

SSW Holding
COMPANY, LLC
Delivering Innovation to Unexpected Spaces

July 8, 2019

D. Mark Doolan
U.S Environmental Protection Agency
Air and Waste Management Division, WRAP Branch
11201 Renner Blvd.
Lenexa, KS 66219
913-551-7169

RE: Collis, Inc Annual Certification for Compliance with LUCs/ICs for first half 2019
USEPA Reference ID No. IAD047303771

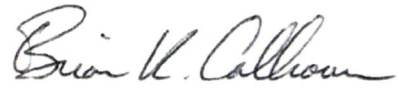
As a condition of the Environmental Restrictive Covenant (ERC) entered into between the United States Environmental Protection Agency (USEPA), SSW Realty Iowa, LLC, and Collis, Inc (Collis), Collis is required to provide the USEPA Project Coordinator with a written Annual Report describing compliance with the implementation of Land Use Controls (LUCs)/Institutional Controls (ICs) for soil and groundwater at the Collis property, as detailed in the ERC. In order to verify the implementation of LUCs/ICs at the Collis property, semi-annual inspections are conducted. The first half 2019 semi-annual inspection was conducted April 8, 2019.

1. Status of compliance with land use or resource use restrictions, including institutional controls, as stated in the ERC:
    - The property is not being utilized for residential purposes
    - There has been no construction or use of wells or other devices on the property for the extraction of groundwater to be used for consumption, irrigation, or any other purpose.
    - There has been no in-situ treatment of the groundwater to expedite groundwater remediation.
    - There has been no excavation or subsurface activity greater than two (2) feet below ground surface at the property.
    - The gravel lot has been inspected and maintained on a semi-annual basis.
    - No activities were conducted that would interfere with the function of or obstruct access to any groundwater monitoring wells, vapor pins, and/or monitoring devices located on the property.
    - No new structures planned for human occupancy were built on the property.

2. Any other relevant information regarding other activities or matters at the Collis facility that affect or may affect the implementation of the requirements of the ERC:
    - None noted

This concludes our Annual Certification Report for calendar year 2018; if you have questions feel free to contact me at (517) 227-6118.

Sincerely,



Brian Calhoun
Corporate Safety & Environmental Director
SSW Holding Company, LLC
176 West Colon Road Coldwater, MI 49036
(517) 227-6118
bcalhoun@sswholding.net

235 E. Main St, Suite 107
Northville, MI 48167
248.489.9636